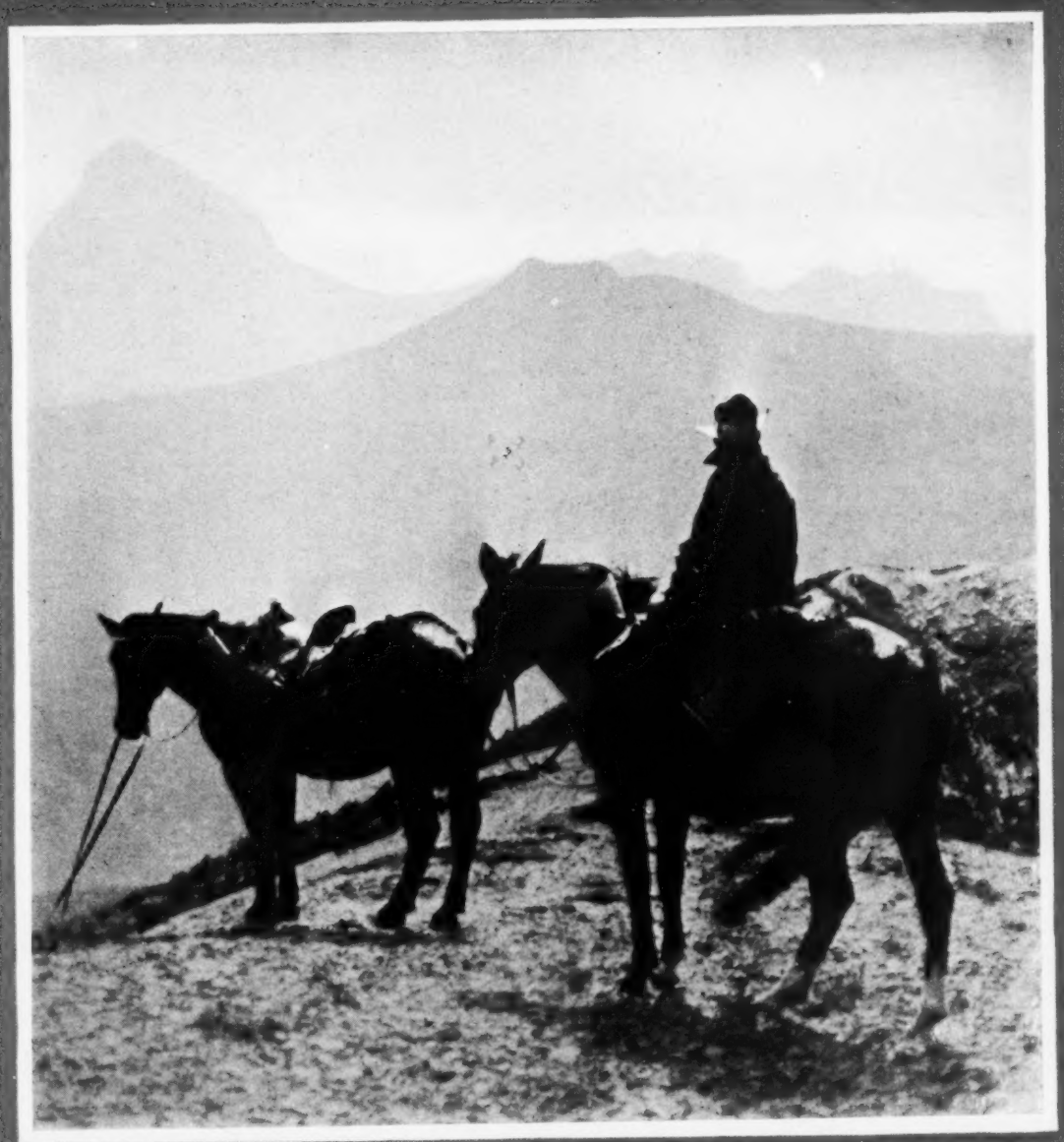
The AMERICAN RIFLEMAN



Published By
The National Rifle Association of America
Incorporated 1871

JUNE, 1930

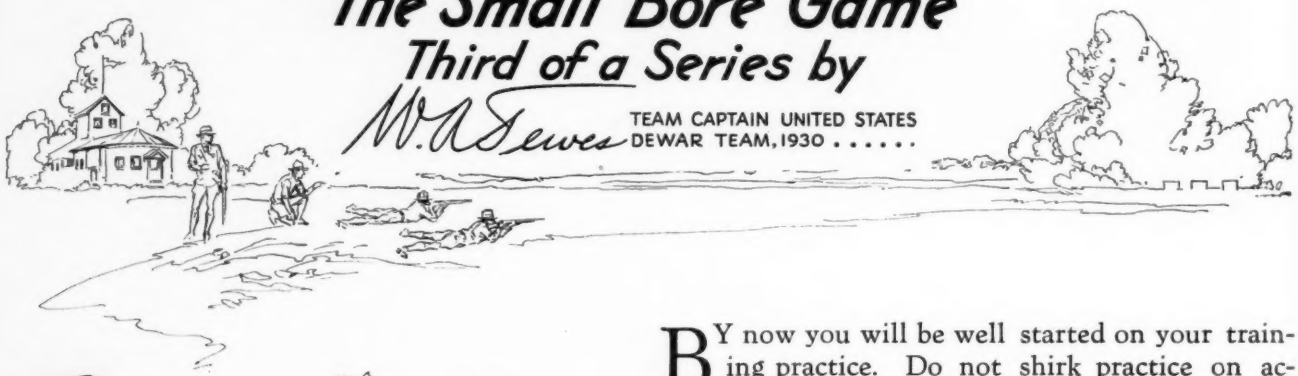
25 CENTS

Lining Up for CAMP PERRY

The Small Bore Game

Third of a Series by

W. A. Lewes — TEAM CAPTAIN UNITED STATES DEWAR TEAM, 1930 . . . . . .



BY now you will be well started on your training practice. Do not shirk practice on account of weather. Do your stint on dark days, bright days, windy or still, rainy or clear. Learn your wind and elevation zeros thoroughly at 50 and 100 yards.

Have three sizes of apertures---an average, a larger and a smaller one.

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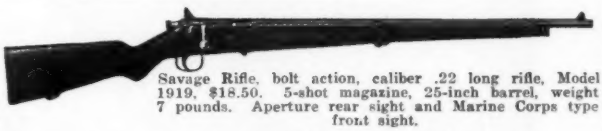
Lyman No. 17 Aperture Front Sight for Winchester, Model 52	2.50
Winchester, Model 52, complete with above sights and sling (sights not attached)	$49.75



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for bull's-eyes or bull moose

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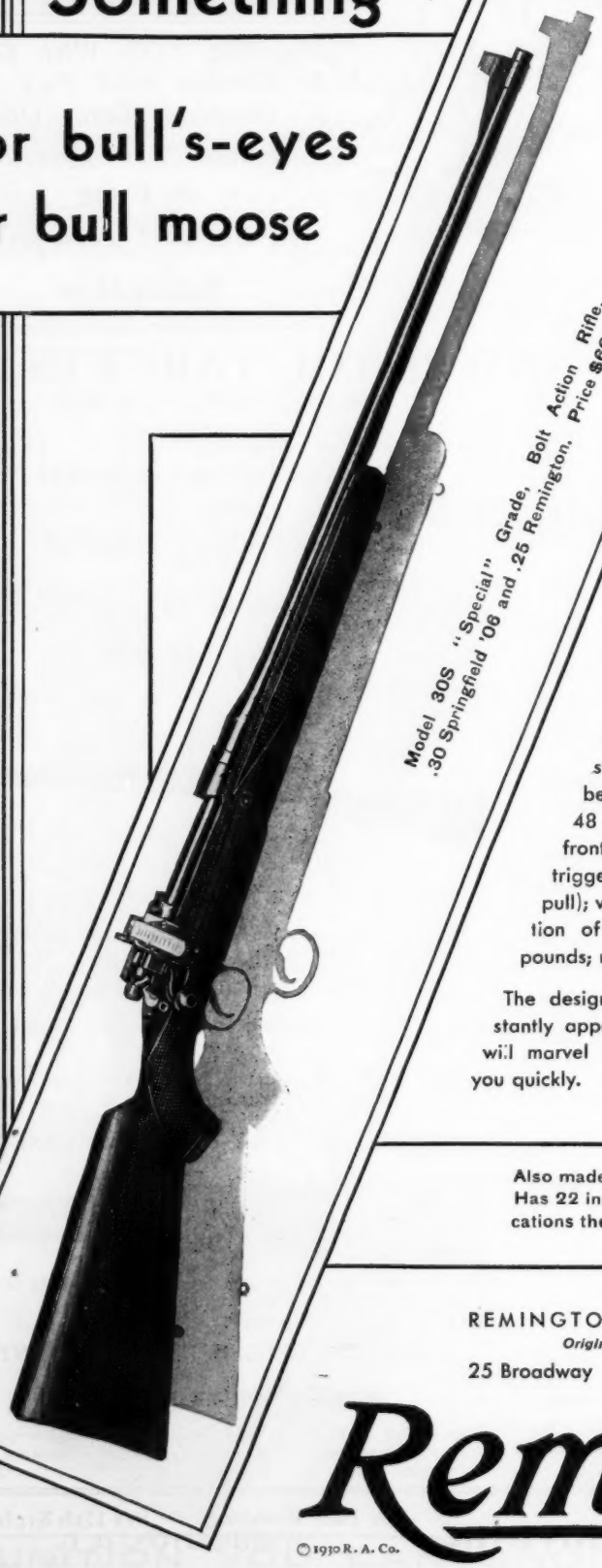

FOR the big game hunter or target shooter who wants something "special" in a bolt-action rifle, Remington now offers the Model 30S with special stock and many other refinements.

Specifications: Twenty-four inch barrel, carefully bored and rifled to give extreme accuracy; special high comb stock designed for use with receiver sight or telescope; forestock longer and fuller; full pistol grip with rubber cap; shotgun style steel butt plate; Lyman No. 48 windgauge receiver sight; Lyman gold bead front sight mounted on a matted ramp; double trigger pull of the military type (option of single pull); wide screw eyes for quick release swivels (option of regular screw eyes); weight about eight pounds; made in .30 Springfield '06 Caliber only.

The design and finish of the new Model 30S will instantly appeal to every man who loves a fine rifle. You will marvel at its accuracy. Your dealer can get it for you quickly.

Also made for .25 Remington Cartridge. Has 22 inch barrel. Otherwise specifications the same.

REMINGTON ARMS COMPANY, Inc.
Originators of Kleanbore Ammunition
25 Broadway New York City

Remington

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Hurray! "Bull's Eye!"

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"Western Lubaloy Cartridges Will Again Be Used Exclusively This Summer"

THIS letter from the director of a boys' camp at which the rifle-training work has been unusually successful, is an impressive tribute to the accuracy and non-fouling feature of WESTERN *Lubaloy* .22 cartridges.

One after another, important matches throughout the country have been won with *Lubaloy* cartridges. The Kemper Military School Rifle Team (Boonville, Mo.) used *Lubaloy .22's* in winning 41 out of their 42 matches fired during the season, in competition with other military schools and Senior R. O. T. C. units.

WESTERN *Lubaloy .22's* shoot with the same kind of accuracy that has made *Lubaloy* high-power cartridges famous the world over. And they won't rust your gun. WESTERN'S special noncorrosive priming and smokeless powder keep the bore as bright as new. The *Lubaloy* coating does away with the gummy grease found on ordinary lead-bullet .22's. Grit, lint, and dirt will not stick to them and get into your gun. Write us for interesting descriptive leaflets.

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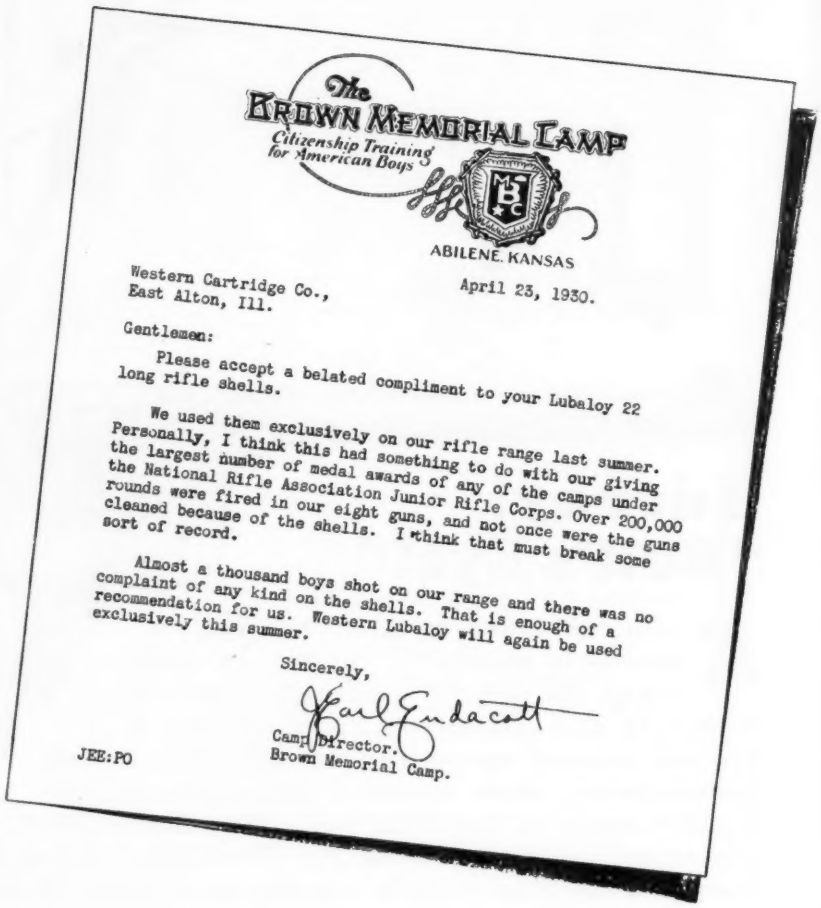

The BROWN MEMORIAL CAMP
Citizenship Training for American Boys
ABILENE, KANSAS

Western Cartridge Co.,
East Alton, Ill.

April 23, 1930.

Gentlemen:

Please accept a belated compliment to your Lubaloy 22 long rifle shells.

We used them exclusively on our rifle range last summer. Personally, I think this had something to do with our giving the largest number of medal awards of any of the camps under the National Rifle Association Junior Rifle Corps. Over 200,000 rounds were fired in our eight guns, and not once were the guns cleaned because of the shells. I think that must break some sort of record.

Almost a thousand boys shot on our range and there was no complaint of any kind on the shells. That is enough of a recommendation for us. Western Lubaloy will again be used exclusively this summer.

Sincerely,

Earl Endacott

Camp Director.
Brown Memorial Camp.

JEE:PO

Lubaloy is a patented bullet-jacket metal, a lubricating alloy as hard as steel without being brittle. Similar alloys have been adopted by the United States and other governments.

Western
Lubaloy
(LUBRICATING ALLOY)
Coated **.22's**

The AMERICAN RIFLEMAN

Vol. LXXVIII — No. 6

JUNE, 1930

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L. J. Hathaway, *Editor*

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EDITORIAL

The Oregon Trail

A PRAIRIE schooner drawn by mule teams is retracing that famous trail to the Pacific coast over which traveled a hundred years ago this summer the first overland emigrants to Oregon. The caravan will follow as nearly as possible the Oregon Trail, keeping to the schedule followed in 1830 by the dauntless little company headed by Jedediah Smith, Dave Jackson, and W. L. Sublette. Everywhere it will be greeted by flourishing villages and cities that grew in the wake of this first far-Western migration.

The event strikes a responsive chord in the heart of every Westerner, for in that trek a century ago the development of the West began. But in a larger sense it is an occasion for national celebration, because it was over this trail that American influence was carried to the Pacific, and united this expansive territory under one Government. By this route the Oregon colonizers reached the Columbia River Valley in the middle forties, the Mormon pioneers settled Utah in 1847, and the gold rush to California in 1849 was made possible.

The Oregon Trail led out into territory that did not definitely belong to the United States. This country laid claim to the Oregon country through the discovery of the Columbia River by Capt. Robert Gray in 1792, and that memorable expedition across the continent by Lewis and Clark in 1804; but the claim was disputed by Great Britain. It was the colonization that followed the opening of the Oregon Trail that clinched the case in favor of the United States. California and the territory between the Sierras and the Rockies was then under the Mexican flag. American colonization was a vital factor in bringing this vast and wealthy region within the Union.

No more fascinating story has ever been written into history than the conquest of the West by way of the Oregon Trail. The advent of the prairie schooner was a logical sequel to the voyage of the *Mayflower* and the pioneering of Daniel Boone.

President Hoover recently requested nation-wide celebration of the Oregon Trail between April and October. The rifle had an important place in the equipment of the prairie schooner in 1830. Without it the traveler would not have ventured far west of the Mississippi. It is fitting, therefore, to again bring the rifle into play along the Oregon Trail. The N. R. A. will lead the riflemen of the country in celebrating this great event, so rich in its significance to the American people, by organizing and conducting a rifle shoot, conditions of which are outlined elsewhere in this issue, to be known as the Oregon Trail Match.

True Sportsmen

THE conditions surrounding the firing of the N. R. A. Matches are such that dependence, of necessity, must be placed in the honesty and integrity of the shooters.

In the postal matches, to a greater degree than in shoulder-to-shoulder matches, true sportsmanship must assert itself. In these matches, by collusion between the contestant and the witness, a false score can be reported. To be a good rifle shot, one must have a clean, healthy mind and body. What could be more distasteful or more absolutely useless than a crooked score? Rifle-shooting is designed to train the man or woman in self-control: the mind, the eye, the arm, the hand—all are brought into play. Of what use to anyone is a medal won if the contestant fails to fire in accordance with the conditions of the match? It is to be regretted, therefore, that several acts have been committed recently by men and boys participating in matches conducted by the N. R. A. which make it necessary that summary action be taken, as indicated by General Reckord's statement on page 25 of this issue.

There are people who must be disciplined—who will not play the game according to the rules. Such is the case and probably always will be. If and when individuals of such low degree are discovered, they should be punished. Only by summary action can the shooting game be maintained upon a high and dignified plane. The policy of the N. R. A. is to keep their matches clean and upon a sportsmanship basis. The matches must be safeguarded.

Sportsmen can not be made, but those who are not willing to play the game as true sportsmen must not be permitted to participate. As a lesson to others, who may fall into evil ways, the guilty should be punished. The matches must be kept clean for sport's sake; better by far to lose a match fairly than to win unfairly. The man who tries to win fairly and fails, and, with a smile, congratulates the successful competitor, is the true sportsman.

The rifle game is a clean, healthy sport, and the aim of the N. R. A. is to keep it so. To this end the crooked shooter should be thrown out. While it is to be regretted that it has been found necessary to suspend or expel two competitors for sharp practice, the shooters will stand behind the N. R. A. in its prompt and summary action in every case that has been brought to its attention, supported by proper evidence.

The N. R. A. can not make all shooters honest, but by eliminating the dishonest shooter, the game will continue to be a competition b e t w e e n true sportsmen.

The AMERICAN RIFLEMAN

Vol. LXXVIII JUNE, 1930 No. 6

When the Gang Meets at Sea Girt!

By FRANK J KAHRS

NINE years ago the first Eastern Small-Bore Tournament was held at Sea Girt, N. J., and that historic range saw for the first time an event exclusively for the small-bore or .22-caliber shooters. It was a decided success, and a general request was made by everybody present to have the shoot become an annual affair. Each year since then the range has been given over to practically a week of small-bore shooting, and the competitions have been known as the Eastern Small-Bore Championship Matches, under the auspices of the New Jersey State Rifle Association, and sanctioned by the National Rifle Association, which has rendered practical support each year to make these competitions possible. The most prominent small-bore shooters of the eastern section of the country assemble there each year, and the quality of the shooting is exceedingly high. That is of course to be expected when good shots get together.

The shooting is at 50, 100, and 200 yards, and there is some intermediate distance shooting when the individual Palma Match is fired, the ranges being 150, 175, and 200 yards.

As there are unlimited facilities at Sea Girt, the firing line at 50 and 100 yards can be extended almost without limit, and as a result some of the individual matches are fired with all of the shooters on the line at one time. It is not a strange sight to see 120 shooters on the line, and this makes for excellent competition, because everyone then shoots under the same conditions. At 200 yards there are facilities for thirty-two shooters at one time.

There is of course more to the Sea Girt shoot than the individual shooting, because it affords an opportunity for the forming of new friendships and the continuation of old ones. Then, again, this annual get-together provides an outlet for the accumulated thoughts of the shooters who closely study arms, ammunition, and the accessories pertaining thereto. In other words, Sea Girt is a clearing house of ideas pertaining to small-bore shooting.

Sea Girt is excellently situated for an event of this kind because it presents many opportunities for an ideal vacation. It is located on the Atlantic coast, within sight and sound of the ocean, and within easy striking distance of the famous resorts of the Jersey coast. There are excellent camping facilities at Sea Girt, and all conveniences.

Very few changes are made from year to year in the program, because, from the beginning, it has been the thought of those who prepare the program to keep the conditions uniform, so that comparison may be made, and development or progress noted. This year the shoot will run from Wednesday, July 2, to Sunday, July 6, inclusive. The first day—July 2—will be given over entirely to the Unlimited Re-entry Matches, at all ranges. The Pistol Matches, Inter-Divisional and 44th Division, of the New Jersey National Guard, will also be shot.

The actual shooting will get under way on Thursday morning, July 3, at 8 a. m., with the Eastern Team Match, which consists of teams of four, 10 shots and 2 sighters each, at 50, 100, and 200 yards, for the Frankford Arsenal Rifle Club's perpetual trophy. This was won last year by the District of Columbia National Guard Rifle Team, with a score of 1,173. This match will be followed at 1 p. m. by the Palma Team Match, also consisting of four members each, 2 sighters and 15 shots for record, at 150, 175, and 200 yards. The winner receives the Proudman trophy, presented by Edward H. Proudman, of New York, for annual competition. The first individual match begins Friday morning, July 4, at 8 o'clock. It consists of 2 sighters and 10 shots at 50, 100, and 200 yards. This is followed by the Palma Individual Match, beginning immediately after, and the course here is similar to that of the Palma Team Match. When this match is completed an entirely new match—the 100-Yard Individual—will go on at 5 p. m. This calls for 2 sighters and 20 shots for record.

The Eastern Two-Man-Team Match at 100 and 200 yards is the first match scheduled for Saturday, July 5, beginning at 8 a. m., and this is followed by the Spencer 20-Shot Match at 200 yards, scheduled for 11 a. m. The Camp Perry Special, which is an individual match over the Dewar course, begins at 3 o'clock in the afternoon. Sunday, July 6, is get-away day; but even so, there are three matches scheduled, the first being the Inter-State Team Match, the conditions of which have been changed from the Dewar course of last year to one range only—namely, 200 yards. Each member of the team fires 2 shots for sighting and 20 for record. The Spencer cup, presented for annual competition by Gen. Bird W. Spencer, goes to the winner. The Swiss Match begins at 11 o'clock, and as is pretty well known, this is a competition which produces much enjoyment on the part of all concerned, and includes the unlucky competitor himself when he hears the scorer announce: "Mr. Blank's first and last shot for record, a 4!" Last year J. A. Noxon, of Sea Cliff, N. Y., fooled the scorer until he had run up 46 consecutive bull's-eyes, which is the greatest number made in this match since it was put on the program in 1924.

The Long-Range Individual at 200 yards, 2 shots for sighting and 20 for record, is scheduled for 2 p. m. on Saturday, and closes the shoot. There are, of course, medals given for most of the team matches, and in some of the individual competitions. Many friends of small-bore rifle-shooting donate yearly cups, merchandise, and cash.

You can not go wrong planning a trip to Sea Girt. You are bound to have a good time. The whole family will thoroughly enjoy the week whether they live in the tents provided on the range, where ample facilities are available, or in the nearby hotels or boarding houses. While Dad is out on the firing line, cussing his luck, the wind, the range officials, the boy in the pit, or the statistical office the kids and women folks will find the beach a mighty fine place to spend the day, either loafing on the sand or enjoying a cool dip in the ocean.

Gen. Bird W. Spencer will be the Executive Officer this year, as he has been since the shoot began; with Lieut. Col. Alvin H. Graff and Mr. Frank J. Kahrs as Assistant Executive Officers. The Chief Range Officer will be Maj. Harry L. Smith, of the U. S. M. C., who will be assisted by the usual complement of range officers familiar to the competitors. The Chief Statistical Officer is Maj. Henry N. Marsh, who has served in this capacity also since the inception of the matches. The Official Scorer will be Mr. O. M. Schriver, loaned by the National Rifle Association.

A complete program of the Sea Girt matches can be obtained from Gen. Bird W. Spencer, Sea Girt, N. J.

A Small-Game Express Rifle

By CAPT. G. L. WOTKYNS

A WELL-CONSTRUCTED caliber-.22 match rifle, preferably of the single-shot type of action, such, for instance, as the B.S.A. or Winchester, both of which are rugged, simple, and of great strength, can be converted without much difficulty into remarkably efficient small-game weapons giving modern ballistics and a high degree of accuracy. I know, for I have such a rifle so converted.

An ideal small-game express rifle. Springfield barrel, B. S. A. No. 12 action, and special stock by Griffin & Howe. Fecker 10-power glass. Weight of arm complete, 10 pounds

The outstanding features of this conversion are a very flat trajectory over the first 100 yards, excellent accuracy, and, in most instances, entire disruption of the small projectile when it strikes earth, thus avoiding the very undesirable ricochet.

A very large proportion of small game and vermin are killed within the first 100 yards. With the long-rifle rim-fire cartridge we lack striking energy and flat trajectory, although accuracy is satisfactory in the main. The very curved trajectory, which is of baseball form, as it were, works against us, and we either overshoot or undershoot our quarry. If we do strike it the game quite often escapes to die beyond our reach.

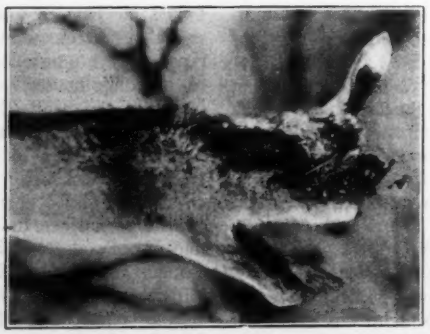
The express principle is nothing more or less than high velocity applied to a comparatively light bullet. The first American rifles were true express weapons, and although their range was comparatively short they were nevertheless very efficient and remarkably accurate over the short distances then sufficient for game and military purposes. The principle is, I believe, conceded to be American, and was later taken up and improved upon by the British in their construction of powerful big-game rifles, and the term "Express" given to the system.

The advent of smokeless powder and mantled or jacketed bullets has made it possible to so improve the express system that accuracy and one-sight setting can be beautifully combined in a special .22-caliber cartridge, while report and recoil are kept down to a minimum.

The striking energy at 100 yards of the cartridge in question is superior to that of the most modern .32-20 and .25-20 loads, and the beaten zone or danger space so nearly flat as to be continuous over the first 100 yards, being not greater than ½ inch above the line of sight at mid range when sighted to strike center at 100 yards. This makes for very efficient field work, and a high percentage of kills is the result. The average accuracy is well illustrated by the six targets of five shots each at 50 and 100 yards. These targets are not selected, and they were not fired from a rest but were made in the prone position with sling and 10-power telescopic sight.

The shell employed is the well-known but now little-used Winchester .22-caliber center-fire case, which can be obtained from the various cartridge concerns for approximately $1.65 per hundred, unprimed. This fine little shell is a wee bit over 1⅜ inches long; and, when loaded as I load it, the cartridge has an over-all length of about 1¾ inches. It will stand reloading many times if the chamber is correctly cut so as to keep down expansion to a minimum.

The most suitable powder, and a really remarkable powder, too, is du Pont 1204; a dense, progressive-burning nitrocellulose powder of very fine granulation and of tubular form. This powder is very cool, produces safe pressures, and generates a velocity for the charge (which is 12 grains as a maximum) that is truly astounding. I have not chronographed the velocity as I have not at hand the means of doing so; but from the field trials and figures of the maximum ordinate at 100 yards, the angle of elevation necessary for this range, and the known ballistic coefficient of the bullet, it works out to between 2,400 and 2,500 foot-seconds at the muzzle. Were this splendid powder, which is manufactured especially for small cases, not available, I very much doubt if we could report as we have upon this small case. As it is, the powder burns in an ideal manner, and generates safe pressures. The charge of 12 grains, which is maximum because no more can be gotten in, is slightly compressed when the bullet is seated home. This density of loading appears to be just the medicine required—in this instance at least. The very slight trace of ash remaining in the barrel after discharge indicates uniform combustion, this ash being deposited in the first 8 or 10 inches of the rifled bore. I have fired this little rifle in the dark in order to determine what sort of muzzle flash results, and this is a dull-red glow, and very slight, indicating fine combustion. There is no trace of vapor at the muzzle that I have so far been able to discern when the little piece is discharged. The report is sharp and whiplike, but not loud enough to seriously alarm game.



Illustrating explosive effect of bullet. A rabbit struck in head at 80 yards. The little pill delivers all its energy; the result is immediate and complete

This powder throws finely in a powder measure such, for instance, as the Ideal No. 5. It is best, however, from time to time to check the charges with a fine balance in order to be sure that uniform charges are being delivered by the measure.

The bullets used are of several makes. I have been using the Niedner 44½-grain bullet in soft point, with a diameter of .223, and the UMC 45-grain Velo-Dog 5.5-mm. full-patch bullet, diameter somewhat greater than .223. To be exact, it is .225 of an inch; and in this size I have used it with very fine results, although I shall size it down to .223 or closely to this in future. Sized down, this latter bullet will have absolutely uniform diameter, although it is exceedingly uniform as it is; but I think it is better to employ a bullet more nearly conforming to the groove diameter than one somewhat above this size.

The Niedner bullet explodes upon contact, and is just about the most effective little missile upon vermin I have ever seen; it does not ricochet, and is therefore very safe to use in settled districts. The UMC Velo-Dog bullet is full-mantled, but the velocity imparted to it is sufficient to disrupt it in

most instances; and in over 250 shots fired with this bullet I have heard just 3 ricochets, and I am unable to say if these were due to the bullet, parts of the bullet, or small stones hurled into the air from the fierce impact of the wicked little slug. This latter bullet kills as suddenly as does the Niedner bullet. The effect is quite like that of its bigger cousins, the .25- and .30-caliber super-velocity cartridges. Ground squirrels struck by this bullet in the head just lose their heads; and if struck in the body, have a hole of exit about the size of a dollar punched out as nicely as you please. The effect of both bullets is as if a stroke of lightning had hit the victim. It dies in its tracks.

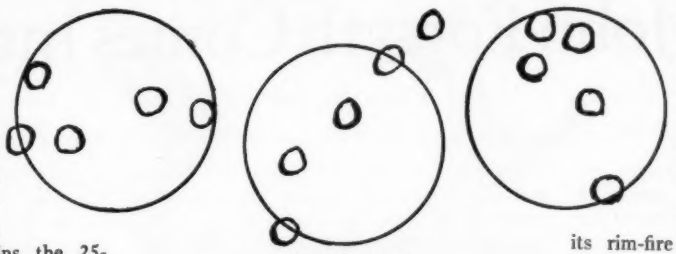
Recoil is peculiar; it is so slight that the scope tube moves about ¼ of an inch, and is a mere tap. The report and strike are so nearly simultaneous as to bewilder one at first. The bullet cracks like its big brother, the Springfield bullet, although, of course, the sound wave is less severe. The point to keep in mind at all times is not to overdo the hold right up to 125 yards, or, for that matter, somewhat beyond this distance. One must hold directly upon the point it is desired to strike within the effective hunting-field range of the bullet. If a squirrel (ground squirrels are a pest in this section of the country) is just missed, provided his head is quite close to the ground and the bullet strikes just under or over it, it acts dazed for several seconds.

Wind affects the bullet to a considerable extent, as is to be expected, for its sectional density is not high; but under usual field conditions this is not serious. However, beyond 100 yards one must take wind into account unless the day is calm. Up to 100 yards quite a gale must exist to cause appreciable effect upon the flight of the little slug.

To date I have fired about 800 shots, and the most careful inspection of the rifle bore discloses not the slightest trace of erosion, and absolutely no corrosion. Of course I have been using noncorrosive primers, size 6½. These primers are simply perfect, and the rifle cleans as easily as a shotgun. One slightly oiled rag and a smearing of the bore with Saftipaste is all that is necessary to keep it in perfect condition for the next sniping expedition. It is the easiest rifle to keep in condition I have ever used.

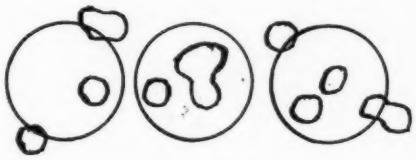
Now, the rifle I converted is my B. S. A.-Wiles-Springfield. This little piece consists of a No. 12 B. S. A. action (Martini), a Springfield M1, caliber-.22 barrel, and a stock by Seymour Griffin, the original job being carried out by Seymour Griffin, of Griffin & Howe, New York City.

The Springfield barrel is ideally suited to a conversion of the sort I am telling about. Its steel and treatment are perfect for work of this kind.



100-yard groups

The metal in these fine tubes is identical to that employed in the service barrel, and the form of rifling such that it should give very long life with metal-patched bullets. The twist, one turn in 16 inches, which is standard for the long-rifle rim-fire cartridge and 40-grain bullet, used in that little cartridge, is correct for a 45-grain bullet driven at a velocity of 1,400 feet per second or over. The WCF .22 cartridge is loaded with a 45-grain lead bullet at a velocity of 1,500 feet per second, the correct pitch of rifling for that cartridge being one turn in 16 inches. The diameter of the standard caliber .22 long-rifle rim-fire bore is .223, or very close to it, while



50-yard groups

the WCF .22 is about .225 to .226 inch. It is necessary to reduce the necks about .0025 of an inch in order that the cases will hold correctly a bullet of .223 of an inch.

I had my reamer made by George Titherington, of Stockton, Calif., who is a very successful rifle-barrel maker and a consummate workman in metal. George made the reamer according to directions, and the result is a fine chamber, so tight at the neck that it is not necessary to resize case necks after the original treatment, as they always hold the bullets firmly. This type of chamber makes for increased velocity and long life for the bullet seat, which is the heart of a barrel. I also used this reamer to cut the chambers for my straight-line loading tool and case dies, which were made out of a rejected .22 barrel, all of them being hardened to resist wear.

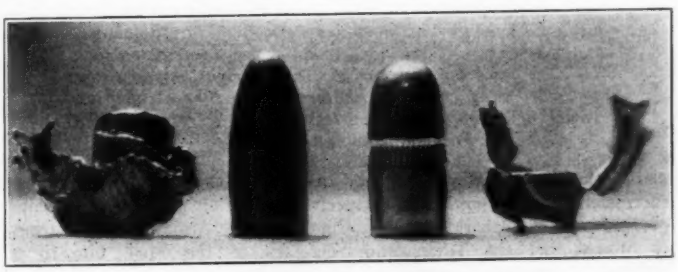
The little Martini block was, of course, originally adjusted for rim-fire ammunition, and a new striker had to be constructed. This new striker has its tip cut so that it is eccentric; i. e., its point is now on the periphery of the striker body. The block had its rim-fire striker hole plugged, and a new hole cut for the center-fire striker. It is essential that this new striker be made of tough material, and I used tool steel in its untempered state, which produces a tough job that is not easily broken. The size and protrusion of this striker from the face of the breech block are very important. It should be of the same diameter and protrusion as employed on the service rifle; otherwise trouble will result from ruptured primers, and the action may be difficult to open. Correctly made, everything in this respect will function perfectly. Altering the breech block is not difficult provided a good workman has the job in charge and his directions are clear at the start.

The B. S. A. action in my opinion is ideal for a small-game express rifle. It is very simple, rugged, and exceedingly strong. The action can be disassembled in a moment, and the substitution of a new extractor, striker, or mainspring made with ease if that ever becomes necessary, which is seldom the case. Next to this action, the Winchester single-shot action is hard to excel, for that action, too, is very strong, simple, and rugged. There are other actions, to be sure, but in my opinion the two above-mentioned are just about ideal.

Speed of fire is not essential in this form of marksmanship, but great accuracy of fire is; and as the spent shells are again reloaded, a single-shot action fills the bill perfectly. There is, besides, a satisfaction in knowing one has just a single shot for each test of skill as a marksman, which results in an earnest effort to anchor the game. Hurry and flurry is beside the issue; filling the air with lead is out of the question.

The angle of elevation required with this fine little cartridge at 100 yards when loaded with 12 grains of No. 1204 du Pont, and either the Niedner or UMC metal-patched bullets, is 3 minutes from zero, which latter I carefully established at 12½ yards to be sure of my figures. The distance from the center of the telescope to the center of the rifled bore is 1½ inches, and I fired at the short distance of 12½ yards as gravity is so slight as to be neglected in any but the most exact calculations. At this distance, ⅛ of an inch equals 1 minute. When the bullets finally printed below the point of aim by 1½ inches, I had my zero; and by adding 3 minutes of elevation

(Continued on page 23)



Enlarged view of recovered bullets and original metal-cased bullets. Extreme left shows remains of Velo-Dog bullet after firing at 200 yards. Then is shown the 22½-grain Niedner copper-jacketed soft-point bullet; then the U. M. C. Velo-Dog 5.5-mm. 45-grain full-patched bullet; and lastly, what remains of a Niedner bullet after firing at 200 yards

Alexander John Forsyth Comes Into His Own

By PAUL B. JENKINS,
Advisor on Arms, Nunnemacher Firearms Collection, Milwaukee Public Museum

THE chances are 999 in 1,000 that you never heard of him. Yet, if you are a gunner—hunter, soldier, sailor, rifleman, target shot, pistol shot, trap-shooter, naval gunner, artillerist, World War veteran, police officer, guard of anything valuable whatever, possessor of a .22 caliber, or marksman capable of hitting a dinner plate at a thousand yards with a telescope-sighted Springfield and with dreams of trying for the next Olympic team—nay, it you are a miner, quarryman, building contractor, excavator, builder of subways or tunnels, or a farmer planning to blast the stumps out of your latest clearing—then he was your best friend in the line of your business or your recreation, and you never pulled a trigger or set off a blast but he made it possible!

Never a shot has been fired in the wars of a hundred years—certainly in the vast majority of the incalculable munitions of the Mexican War, the Indian Mutiny, the Civil War, the Franco-Prussian War, the Central European wars, the Chinese-Japanese War, the War with Spain, the Boer War, the Boxer Insurrection, the Russo-Japanese War, the ceaseless round-the-world gun fire of the four appalling years of the World War, and every fight, skirmish, and revolution, from Custer's hill, beside the Little Big Horn, to the latest, or the next, Mexican, Haitian, or South American row—but every trigger touch, machine-gun spray, or lanyard pull, from the trenches to the 76-mile bombardment of the German-Paris gun, was made possible by his invention.

And yet the world practically never heard his name!—until, the other day, this very year of 1930, when at the spot that has been the heart of the British Empire these thousand years, official Britain stood uncovered as there was unveiled in his honor the only memorial ever erected in honor of any private individual within the precincts of the Tower of London.

Who was this man? He was a humble, all but unheard-of, all but completely forgotten country minister of a remote Scotch rural parish, who had but the one pulpit his long life through, where his father ministered before him, and from whose sacred desk the two—father and son—declared the Word for a hundred years in succession, preaching, marrying, and burying for more than three consecutive generations of parishoners.

Note who stood uncovered before that superb bronze tablet in his memory as there fell away from it the joined flags, the Union Jack and the Lion of Scotland: Lord Cottesloe, Chairman of the Memorial Committee; Lieut. Gen. Sir Herbert Uniacke, Lieutenant of the Tower; Col. Dan Burges, V. C., Resident Governor of the Tower; Maj. Gen. Sir George Younghusband, Keeper of the Jewel House; Lord Dillon; Lieut. Gen. Sir Webb Gillman, Master-General of Ordnance; Sir Lionel Earle, Secretary-General of His Majesty's Office of Works; Mr. A. E. Widdows, representing the Secretary of State for War; Mr. C. R. Peers, Inspector General of Ancient Monuments; Brig. Gen. W. Evans, of the Royal Artillery Institution; Col. J. H. Robinson, Chief Inspector of Small Arms; Mr. Charles ffoulkes, Curator of the Armories of the Tower and Secretary of the Memorial Committee; Mr. William Adamson, Secretary of State for Scotland; Emeritus Professor Reid, of Aberdeen University, a grand nephew of him in whose honor these representatives of Britain assembled, before a great throng of onlookers, to add the last touch of a nation's recognition of its debt to the incredible, the indisputable, the dramatic and tragic story of the least-known of all the great inventors in the history of mankind!

Tablet unveiled in the Tower of London, January 30, 1930, in recognition of his invention of the percussion system. The devices in the lower corners of the tablet are, at the left, his invertible-magazine type of percussion lock designed for a military carbine; at the right, a percussion lock for firing cannon. Photograph by The Armouries, Tower of London. By courtesy of the Secretary of the Forsyth Memorial Committee

Note who gave that memorial. The work of the leading medallion artist of England, and executed in bronze by the Dorian Workshops, it was the gift of the Third Grenadier Guards, the Rifle Brigade, the Armourers' Company, the Gunsmiths' Company, the Gunsmiths' Association, and a noble host of British and Scottish sportsmen and devotees of the gun. Nor was that memorial the only token of the hour. A medal duplicate struck at the British Mint is to be the perpetual tribute of an award at an annual competition at the Bisley Rifle Meeting, the Mecca of the finest shots of the Empire. Alas! why did they not let us of America also have a part in that recognition of one to whom we, hardly less than they, owe so great a part of all that our land has been and has done and stands for today, alike in the hard-fought hours of war and the pursuits and mighty accomplishments of peace?

On all the long honor roll of mankind's innumerable great men, what long-obscure parish minister ever received such a tribute before, or ever more richly deserved it?

Note what, in that notable hour, was well called "the incredible story" of this man's genius—and, alas! its tragedy at the hands of "the bumptious numskulls who bossed the show in London" under the last of the "first four Georges." (Those words are not reckless American exaggerations, if you please; they are the verbatim comments of an eminent Scotch editor of today in recounting the tale.)

Alexander John Forsyth, born in the little Presbyterian manse of Belhelvie, on the Scotch seacoast 12 miles north of "the Granite City of Aberdeen," first proved his powers by entering Aberdeen University in 1782 at the astonishing age of thirteen. Devoting himself in his later studies to theology and the sciences, in the latter specializing in the rule-of-thumb chemistry of the time, his student years established firm friendships with James Watt, inventor of the steam engine, and who in time helped him to secure his patents; James Mackintosh, the famous lawyer, orator, physician, judge at Bombay, and Member of Parliament; and Robert Hall, within five years after graduation the foremost preacher in England and soon Chaplain to Queen Victoria.

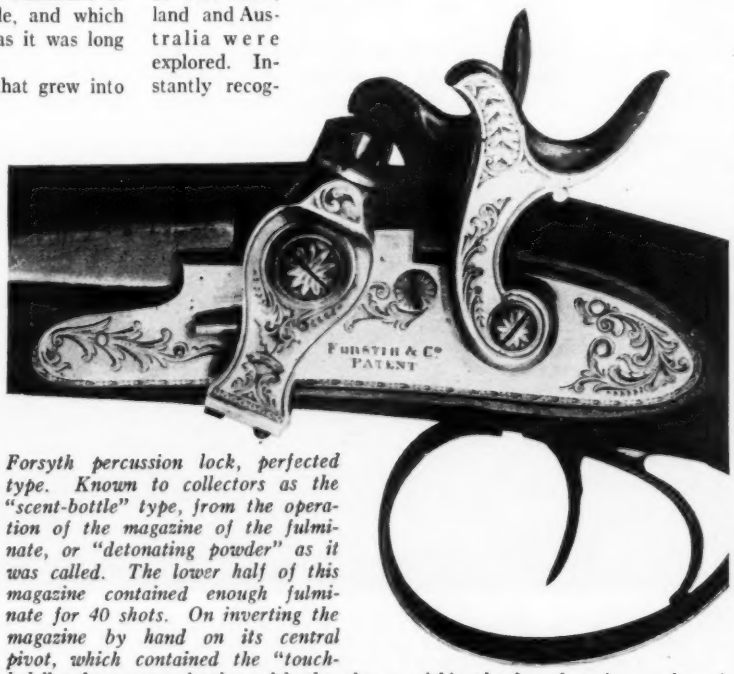
Six weeks after his graduating in theology his father died, and the people of the little kirk immediately called the son as his successor — a ministry destined to last for well over half a century to come.

From his boyhood Forsyth's principal recreation had been that of hunting the waterfowl that resorted in immense numbers to the seashore close beside whose surf stood both manse and kirk. Here it may be said that his genius had its awakening, for on his experiencing the frequent bafflement of the old-time flintlock gunner, when the sea birds dived at the "flash in the pan" that immediately preceded the gun's discharge, instead of futilely cursing both game and gun his mind set itself to the task of so improving the latter that some superior method of igniting the charge might do away forever with repetitions of the occurrence. His studies in the chemistry of the time had familiarized him with the experiments of the French chemist, Berthollet, with several fulminates—explosive compounds so sensitive as to be ignited by varying degrees of forcible contact—a touch or a blow. For his experiments he built a tiny forge and laboratory adjoining the manse, and which, though long since removed, is still remembered in local tradition as "the meenister's smiddy" (i.e., smithy or forge). Here he compounded various fulminating mixtures, finally deciding on the fulminate of mercury as the most practicable, and which he called "detonating powder," as it was long known.

Forsyth percussion lock, early type. One of the earliest of several models of his production. As indicated by the shape of the upper edge of the lock plate, this model was designed for substitution for the regulation flintlock and plate on arms so equipped. The cylinder forming part of the left-hand limb of the mechanism is a magazine containing sufficient fulminate for 40 shots. In firing position it was lowered to contact with the tube or "touchhole" of the barrel, which was encircled by the loop portion of the plate, when it deposited a few grains of fulminate in the tube. The fall of the hammer knocked the magazine to the position shown, when the projection under the nose of the hammer struck and exploded the deposited fulminate in the tube. The flash passed to the charge within the barrel. The lock shown is the left-hand one of the pair on a double-barreled fowling-piece in the U. S. Government collection in the old Smithsonian Building, Washington, D. C. Property of Maj. Jerome Clark, U. S. Army. Photograph by courtesy of Major Clark

After months of experiment that grew into years of absorption of all his spare time, he at last succeeded, in the spring of 1805, in devising a magazine of fulminating powder which, on proper manipulation, would deposit a few grains of the sensitive explosive in a touchhole under the hammer of the piece, upon the fall of which, the flash of its ignition fired the charge within the barrel. With this gun he shot through the season of that year, the arm the incredible marvel of all beholders, as well it might be—the first percussion gun of all history.

Early in the year 1806, receiving the rare treat, for a young minister of that tme, of an invitation to visit friends in London, Forsyth took his wonderful new gun along to show them. Among those who saw the new device was the famous Sir Joseph Banks, president of the foremost English scientific group—the Royal Society—one of the most eminent and the wealthiest of the scientists of the day, who in his youth had been a member of the immortal three-year exploring tour of the ship *Endeavour* in the South Seas, when the transit of Venus was observed from Taihiti, and the coasts of New Zealand and Australia were explored. Instantly recognizing the possibilities of Forsyth's device, Sir Joseph arranged for its exhibition to none other than the then Master-General of Ordnance of Britain, Francis Rawdon-Hastings, Lord Moira (later Marquess of Hastings). Moira, a favorite of George III, had spent his life, since Oxford, in the army and related affairs, serving with distinction in the British forces in America during the Revolution. As a twenty-year-old lieutenant in the Fifth Grenadiers he had received two American musket balls through his cap when leading his men in the desperate assaults at Bunker Hill, and before his service was completed he was adjutant general of Sir Henry Clinton's forces. Intelligence and experience, plus the then ever-present threat of an invasion of England by Napoleon, made him vision the immense gain to British arms from a successful adaptation of Forsyth's invention, and he immediately entered upon a verbal contract with the clerical inventor. Its terms were that Forsyth should continue his experiments in the Tower of London itself, with the advantages of its facilities and workmen, there to devise a percussion lock applicable to the British musket, and also one for use on cannon. In remuneration for these labors, on their success, the ministerial artisan was to receive a sum equal to what the army would save in gunpowder (i.e., by doing away with priming the muskets) for the first two years of use of the new arms. Filling his northern pulpit during his absence was also to be provided for by the Government.



Forsyth percussion lock, perfected type. Known to collectors as the "scent-bottle" type, from the operation of the magazine of the fulminate, or "detonating powder" as it was called. The lower half of this magazine contained enough fulminate for 40 shots. On inverting the magazine by hand on its central pivot, which contained the "touchhole" tube communicating with the charge within the barrel, a few grains of the contained fulminate were deposited in the tube. From the Rudolph J. Nunnemacher Collection of Projectile Arms, Milwaukee Public Museum. Photograph by courtesy of the Museum

Forsyth's work in the Tower was surrounded with great secrecy, undoubtedly with a view to preventing its nature and anticipated resultant advantages being discovered by the watchful enemy across the Channel. This secrecy greatly hampered its prosecution, as the ignorant Tower workmen were almost as greatly frightened thereby as they were by the new and to them terrifying explosives with which Forsyth worked. The fulminate supply of the time being both scant and of unreliable performance, Forsyth was compelled to manufacture his own detonating powder. Despite all difficulties, however, his work was crowned with success, and early in 1807 Forsyth re-

ported and exhibited to the authorities of the Tower a gun lock and fulminate magazine capable of being substituted for the ordinary flintlock on the regulation Brown Bess arms, and a lock for similar firing of a cannon. Thus near was he to fame and fortune in that hour.

At that precise juncture the blow fell. Lord Moira was promoted by the King, and as his successor, there arrived as the new Master-General of Ordnance another royal favorite, the "bumptious numskull" of the Scotch editor above quoted. This eminent stupidity was none other than the then Earl of Chatham, John Pitt, apparently the only unintelligent scion of a family of otherwise superior intelligence and vision. Almost his first official act—undoubtedly inspired by a determination to make a clean sweep of all the works of his great predecessor—was to order Forsyth out of the Tower, to demand of him an accounting of all Government property used, and to command him to take with him all his rubbish, the said "rubbish" being the results of his toil on behalf of his country!

It was all over, or nearly so. The order was peremptory and undebatable, and meant to be so, and from it there was no appeal. Pausing only long enough to secure his patents and to take steps for the formation of a company to manufacture arms using his devices, Forsyth returned to his remote northern parish, there in noble fidelity to his parish work to endure the griefs of so many inventors whose fair hopes, and even successful accomplishments, have turned to bitterest disappointments.

Forsyth's church. Ruins of the old parish church, Belhelvie, Aberdeenshire, Scotland, where Rev. Alexander John Forsyth, inventor of the percussion system of ignition, with his father before him, preached for one hundred years. Photograph by the author

For thirty-six years, from the prime of manhood to advanced age, he toiled at the quiet round of a tiny, obscure rural kirk, receiving the devotion of his people and maintaining his recreation hours among the waterfowl of the shore hard by. He never marrying, a sister kept house for him. Three striking works on behalf of his people are still remembered of him. One was was the quaintly Scotch blending of piety and thrift in the establishment of a parish savings bank for the convenience of those who found the long trip to the establishments of Aberdeen often impossible over the rude roads of the time and place. Another was in the introduction of inoculation for smallpox, a thing regarded with superstitious horror by the primitive peasantry, but the success of which at Forsyth's hands soon brought hurrying multitudes to his amateurly ministering care. The third was the erection in connection with the little kirkyard of a fortresslike structure of practically solid granite, designed to keep the bodies of the dead from the dissecting-room horrors often perpetrated by the medical students of Aberdeen, as narrated with sufficient grisliness in the tales of Robert Louis Stevenson.

Forsyth's life-long home. Manse and old kirk of the parish of Belhelvie, Aberdeenshire, Scotland, where Forsyth was born and where he passed his entire life, save for his year at the Tower of London. Still in use as the parish manse. From a painting made in 1820 during Forsyth's pastorate. From the Memoir of A. J. Forsyth, by Maj. Gen. Sir A. J. F. Reid, K. C. B., M. A., LL. B., of Aberdeen. Photograph by special permission of Maj. Gen. Reid, grand-nephew of Forsyth

At undoubtedly an early date in this quiet retirement it must have been that there occurred his refusal of the great temptation offered him by none other than Napoleon. Bonaparte's spies, who at the time were believed to be everywhere in England, undoubtedly learned of Forsyth's work in the Tower, and its fate at Chatham's hands. Accordingly he was presently offered $100,000 — an enormous sum for those days—for the use of his devices for the arms of France; an offer he instantly refused, out of sheer loyalty to that country by which he had been mistreated and his invention scorned, now eagerly sought by her greatest foe. Well has it been said of this self-sacrificing heroism that had he done otherwise, the subsequent history of mankind might have been different, and Napoleon might never have died on St. Helena. When the next historian reckons up the world's great men, let this man and this deed be remembered.

Not wholly unrecognized was he, however, toward the last. In 1840 his relative, the famous Lord Brougham, spoke in the House of Commons in bitter denunciation of the Government authorities who by that time had appropriated Forsyth's discovery for every musket, rifle, pistol, and cannon under the Union Jack, without a ha'pence of reward to the inventor. Stung by the merited invective and its dissemination in the press of the time, yet acting as reluctantly as possible, the Lords of the Treasury delayed two years but finally voted the seventy-four-year-old minister the sum of $1,000. Other tributes came. Glasgow University gave him an honorary degree "in recog-

(Continued on p. 44)

German and American Small-Caliber Cartridges

Translation by J. S. HATCHER, *from Kugel und Schrot*, No. 13, July 1929

AS IS known, the first nonrust rim-fire cartridges were brought on the market about twenty-five years ago by the Rheinisch-Westfalischen Sprengstoff A. G. vorm. H. Utendoerffer of Nurnberg. At the instigation of an American scientist the American ammunition factories undertook the manufacture of nonrust priming composition about eight years ago and have put cartridges containing it on the market since 1926, claiming that it was something entirely new.

Some American experts pointed out that rust-free priming composition had been in use in Europe for some time. As early as in April, 1927, E. C. Crossman wrote in the *Sporting Goods Dealer* (page 74) as follows:

"It is timely to state here that nonrust composition is not new for any American firm; no American firm invented it. It is merely something new for the American public. It has been used for many years in different military cartridges, and it was proposed for the use of American manufacturers by the Bureau of Mines in connection with rust tests almost seven years ago, formulas and all."

Another expert on the subject, J. C. Gray, in an article which appeared in January, 1928, in the RIFLEMAN, also made reference to the work of the Germans in this field.

Apparently the American firms do not like to acknowledge this fact, and they are now trying to discredit the German ammunition by claiming that its precision is inferior. Thus, for example, we find in the *Sporting Goods Dealer* of October, 1928, the following statements made by E. C. Crossman on the subject of the rim-fire ammunition, .22-caliber, long rifle, of the Rheinische-Westfalische Sprengstoff A. G., Nurnberg:

"Remington reports that the cartridges have a maximum vertical error of 3 inches (7.6 cm.) at a range of 100 yards. The second series had a vertical error of 2.4 inches, both when fired from a Springfield .22-caliber rifle; with a Vickers rifle a vertical error of 4.2 inches was obtained.

"That is nothing wonderful when we consider the fact that the 10-circle at a range of 100 yards has a diameter of exactly 2 inches, and that it is difficult to place vertical errors of 3, 2.4, and 4.2 inches in a 2-inch circle.

"The average velocity was 1,056 feet per second (which equals about 322 meters per second); the Remington Palma and Kleanbore gave a velocity of 1,075 feet per second (about 328 meters per second). That practically agrees with my ordinary experience with foreign ammunition. The best is just about good enough to be beaten by the products of the five ordinary American manufacturers, while the worst is terrible."

In considering these remarks every experienced rifleman will be struck by the fact that no statement is made as to the precision obtained with a comparative cartridge when fired from the same guns under the same circumstances. On the basis of three plots of shots containing ten shots each the deduction was made that the vertical error is greater than the diameter of the tenth circle. Crossman himself is a well-known rifleman who for twenty years has been active writing articles on technical subjects connected with firing, and he surely must know that such statements are for the laity. The readers of the publication in question, who are for the most part made up of dealers, apparently do not seem to be critical, and such a statement is likely to discredit the German manufacturers in the eyes of just such laymen as these. It therefore seemed appropriate to undertake extensive firing tests with the different foreign rim-fire cartridges .22-caliber, long rifle, in comparison with the "R" ammunition, which Crossman judged unfavorable, but which aside from that enjoys the highest regard in other countries. In No. 5 of this publication, which appeared March 1, 1928, the results of firing tests made with German and American nonrust ammuniton, caliber .22, long rifle, at a range of 50 meters in a firing machine were given. Since Crossman gave the results of a fire at a range of 100 yards (91.4 meters), for this fire the range of 100 yards was also selected. For the purposes of comparison the following rifles were used:

1. Winchester rifle, Model 52.
2. Savage rifle N. R. A., Model 19.
3. Springfield rifle, Model 1922 M1 (new from factory).
4. B. S. A. rifle, caliber .22, Model 12.
5. B. S. A. rifle with German barrel.
6. Geco sport rifle, Model 28, No. 2002.
7. Vickers rifle (new from factory).

The rifles which were not new from the factory had fired from 1,500 to 2,500 rounds. The following ammunition was used:

1. Peters Rustless Smokeless (smokeless ammunition with nonrust priming composition).
2. Remington Kleanbore (smokeless, rustless).
3. U. S. Self-Cleaning (smokeless, rustless).
4. Western Noncorrosive Smokeless (smokeless, rustless).
5. Winchester Staynless (smokeless, rustless).
6. "R" (smokeless, rustless).
7. Peters Rustless Semismokeless (like No. 9).
8. Remington Palma Lesmok (chlorate priming composition, rust-forming).
9. Winchester Lestayn Lesmok (rustless, semismokeless powder).
10. Winchester Precision 200 Lesmok (chlorate priming composition, rust-forming).
11. U. S. "N. R. A." Lesmok (chlorate priming composition, rust-forming).

All the rifles were fired from the firing machine, so that personal errors due to the individual riflemen were completely eliminated. Five series of ten rounds were always fired, and the lateral and vertical errors for each series were measured.

It is true that these figures do not give any clear picture of the efficiency of the cartridge, for riflemen firing at a target in so far as the more or less dense grouping of the shots around the center of impact is not considered. It is important for the riflemen to know how many rings the series would have given with proper aim, for his efficiency is not calculated by the lateral and vertical errors but by the number of rings he obtains. This requirement may very easily be met by placing a celluloid disk on the plot of shots, a disk in which concentric rings have been made corresponding to the English 100-yard target, and this disk may be so placed that the center of the circles covers the center of impact of the plot of shots. Theoretically we would then obtain the maximum number of rings obtainable with a proper centering of the plot of shots. This is not always true in practice, for under certain circumstances a still greater number of rings are obtained by a slight displacement of the disk. If this method were used here we would, as we must state for reasons of completeness, get another 17 series of 100 rings distributed as follows:

"R"	5
Winchester Lestayn	1
Palma	2
U. S. N. R. A.	2
Winchester Precision	2
Remington Kleanbore	2
Peters Semismokeless	2
U. S. Self-cleaning	1

In the present case the targets were estimated by having the center of impact and the center of the disk coincide. The English-American 100-yard target has ten concentric rings each 1 inch wide. The diameter of the rings, therefore, is 10=2 inches, 9=4 inches, 8=6 inches, 7=8 inches, etc. (1 inch=25.4 mm.).

In Table No. 1 the first figure in each column refers to the vertical error, the second figure the lateral error, the third figure the total error or dispersion obtained by the addition of the first two figures. The unit used is the millimeter.

Under the heading "Rings" we find the number of rings obtained if the center of the 100-yard target were placed on the center of the group or plot of shots. Table No. 1 also contains the results as far as the velocity was concerned. As may be seen, Crossman's data were incorrect. It has long been known that the German smokeless rim-fire cartridges of .22 caliber have higher initial velocities than the American. Hence the data given by Crossman naturally are surprising. Even if we assume that Crossman's figures refer to the calculated initial velocity and not the measured

Table No. 1

Test No.	Make of cartridge	WINCHESTER M. 52 Dispersion V. H. Tot.	Rings	SAVAGE Dispersion V. H. Tot.	Rings	SPRINGFIELD Dispersion V. H. Tot.	Rings	B. S. A. ORIGINAL Dispersion V. H. Tot.	Rings
1.	PETERS Rustless Smokeless	138+63=201	91	86+ 41=127	97	67+ 56=123	96	127+ 67=194	91
		110+88=198	89	100+ 72=172	95	43+ 35= 78	100	116+ 38=154	92
		81+32=113	96	107+ 30=137	94	62+ 47=109	96	105+ 83=188	92
		143+37=180[1]	85	83+ 56=139	96	89+ 85=164	95	160+ 42=202	91
		92+41=133	95	94+ 49=143	94	108+ 80=188	91	73+ 35=108	97
		113+52=165	456	94+ 49=143	476	74+ 58=132	478	116+ 53=169[2]	463
2.	REMINGTON Kleanbore	68+53=121	96	63+ 54=117	97	66+ 34=100	97	84+ 45=129	95
		56+34= 90	99	88+ 57=145	94	66+ 84=150	94	72+ 52=124	95
		62+49=111	96	68+ 38=106	97	62+ 82=144	94	58+ 89=147	95
		77+32=109	96	73+ 59=132	95	97+ 55=152	94	48+ 38= 86	98
		75+51=126	96	117+ 61=178	92	77+ 65=142	96	65+ 93=158	97
		68+43=111	483	82+ 54=136	475	74+ 64=138	475	65+ 63=128	480
3.	U. S. Rust-free	66+22= 88	96	81+ 50=131	94	98+ 56=154	95	82+ 46=128	94
		66+30= 96	96	61+ 48=109	98	92+ 34=126	94	97+ 56=153	91
		71+21= 92	98	88+102=190	90	91+ 60=151	93	171+ 44=215	92
		50+34= 84	100	151+ 77=228	89	86+ 61=147	96	100+ 90=190	90
		52+46= 98	99	127+ 75=202	95	93+ 50=143	93	85+ 43=128	95
		61+31= 92	489	102+ 70=172	467	92+ 52=144	471	107+ 56=163	462
4.	WESTERN Noncorrosive Smokeless	103+67=170	91	68+ 66=134	94	32+ 58= 90	98	111+ 72=183	93
		92+65=157	92	88+ 67=155	96	148+ 78=226	93	157+120=277	85
		82+40=122	95	71+ 73=144	95	54+ 57=111	96	73+ 90=163	92
		78+33=111	97	154+ 50=204	91	39+113=152	92	64+ 80=144	97
		75+47=122	95	48+ 46= 94	97	57+ 22= 79	98	82+ 86=168	90
		86+50=136	470	86+ 60=146	473	66+ 66=132	477	97+ 90=187[3]	457
5.	WINCHESTER Staynless	142+21=163	91	49+ 34= 83	100	82+ 68=150	95	164+ 83=247	85
		260+41=301	84	74+ 61=135	95	88+ 47=135	90	127+130=257	87
		135+82=217	91	35+102=137	97	116+ 58=174	92	105+102=207	90
		155+73=228	88	81+ 59=140	96	46+ 95=141	92	90+106=196	93
		133+75=208	92	78+ 22=100	95	222+ 50=272	90	80+ 89=169	93
		165+58=223[3]	446	63+ 56=119[3]	483	111+ 63=174[4]	465	113+102=215[7]	448
6.	"R" Rauchlos	52+45= 97	97	50+ 40= 90	98	55+ 60=115	97	34+ 43= 77	100
		50+57=107	99	70+ 45=115	96	64+ 39=103	99	74+ 42=116	97
		92+36=128	97	53+ 48=101	94	65+ 62=127	96	51+ 37= 88	98
		70+30=100	98	84+ 48=132	97	67+ 40=107	97	47+ 68=115	97
		60+43=103	97	84+ 39=123	97	42+ 47= 89	99	47+ 40= 87	99
		65+42=107	488	68+ 44=112	482	58+ 50=108	488	51+ 46= 97	491
7.	PETERS Rustless Semismokeless	89+20=109	95	126+ 43=169	93	79+ 39=118	97	73+ 52=125	94
		63+40=103	97	120+ 49=169	95	102+ 45=147	96	118+ 36=154	93
		52+43= 95	98	55+ 48=103	97	61+ 30= 91	96	148+ 44=192	89
		82+45=127	95	104+ 63=167	93	82+ 50=132	96	121+ 40=161	97
		73+42=115	96	135+ 57=192	92	43+ 59=102	97	85+ 50=135	94
		72+38=110	481	108+ 52=160[5]	470	73+ 45=118	482	109+ 44=153	467
8.	REMINGTON Palma (Lesmok)	55+48=103	99	166+ 78=244	89	54+ 73=127	95	52+ 51=103	96
		58+37= 95	99	82+ 78=160	93	83+ 60=143	95	80+117=197	91
		52+27= 77	98	103+ 84=187	93	63+ 67=130	96	49+ 96=145	92
		82+47=129	96	75+ 62=137	96	70+ 50=120	95	103+ 58=161	92
		60+79=139	97	81+ 88=169	93	44+ 60=104	95	70+ 73=143	96
		61+48=109	489	101+ 78=179	464	63+ 62=125	476	71+ 79=150	467
9.	WINCHESTER Lestayn	72+81=153	94	43+ 47= 90	99	107+ 35=142	96	110+ 53=163	92
		84+77=161	95	93+ 87=180	89	99+ 49=148	94	91+ 68=159	92
		72+52=124	94	78+ 64=142	94	81+ 43=124	96	67+ 52=119	97
		51+72=123	97	83+ 66=149	95	78+100=178	91	170+ 12=182	84
		52+55=107	97	96+ 67=163	94	92+ 78=170	95	95+ 92=187	92
		66+67=133	477	78+ 66=144	471	91+ 61=152	472	107+ 75=182	457
10.	WINCHESTER Precision 200	41+73=114	98	63+ 65=128	96	54+108=162	95	45+ 63=108	97
		79+85=164	96	49+ 32= 81	99	76+ 62=138	92	46+ 66=112	98
		43+48= 91	97	52+ 48=100	97	75+ 61=136	96	64+ 72=136	97
		54+46=100	97	64+ 47=111	98	68+ 40=108	94	35+ 71=106	97
		47+61=108	97	69+ 50=119	96	33+ 65= 98	98	112+ 72=184	94
		53+63=116	485	60+ 48=108	486	61+ 67=128	475	60+ 69=129	483
11.	U. S. N. R. A. Lesmok	45+32= 77	99	110+ 42=152	90	79+ 54=133	94	48+ 28= 76	98
		39+48= 87	97	103+ 77=180	92	70+ 65=135	96	92+ 60=152	95
		43+60=103	99	73+ 58=131	96	71+ 45=116	97	51+ 51=102	98
		62+47=109	97	82+ 78=160	92	42+ 40= 82	99	49+ 63=112	96
		60+57=117	98	108+ 52=160	92	68+ 55=123	96	67+ 88=155	93
		50+49= 99	490	95+ 61=156	463	66+ 52=110	482	61+ 58=119	480

initial velocity, the relation between the types of cartridges is wrong, for the "R" ammunition is about 10 meters per second more than the Remington Palma, which along with the U. S. "N. R. A." has the highest initial velocity of American long-rifle cartridges. The American smokeless cartridges ordinarily have an initial velocity of about from 30 to 40 meters per second less than the German ammunition.

In order to give a better idea of the whole, we have assembled and given in Table No. 2 the number of rings hit with every 50 rounds per rifle and type of ammunition. In this table the cartridges are arranged according to their efficiency. As may be seen from this table, the "R" ammunition is superior to all other cartridges when considered from the viewpoint of the uniformity of the results obtained with all kinds of rifles. In respect to the data for the series of 100 rings (with ten rounds each) it is in this case somewhat surpassed by the nonrustless Winchester 200 Precision cartridge (with Lesmok powder), but it is far superior to all other cartridges in this matter also.

The highest single series of 50 rounds was obtained with the Winchester Lesmok cartridge 200 Precision when used in the medium-heavy German Geco sport rifle 28 model. The best results obtained with "R" ammunition was two rings less; they were obtained with a B. S. A. rifle with German barrel. While, however, the lowest series fired with the Winchester Precision 200 amounted to only 475 rings, the worst series

Table No. 1

B. S. A. WITH GERMAN BARREL Dispersion V. H. Tot.	Rings	GECO SPORT RIFLE M. 28, No. 2002 Dispersion V. H. Tot.	Rings	VICKERS Dispersion V. H. Tot.	Rings	VELOCITY V *s* meter seconds	REMARKS
104+68=172	92	112+ 28=140	96	89+ 52=141	96		
67+85=152	95	76+ 29=105	96	73+ 70=143	96	284	
88+44=132	96	109+ 30=139	95	138+ 51=189	94	+ 8	(1)—1 Bad Shot.
114+35=149	94	76+ 50=126	94	77+ 40=117	96	—13	(5)—1 Misfire.
93+44=137	94	51+ 64=115	97	88+ 32=120	95		5 Hangfires.
93+55=148	471	85+ 40=125	478	93+ 49=142	477		
67+35=102	97	93+ 42=135	93	62+ 42=104	98		
94+72=166	94	70+ 55=125	96	52+ 82=134	95	288	
71+35=106	96	124+ 71=195	90	84+ 86=170	94	+ 7	(9)—3 Hangfires.
42+28= 70	99	37+ 75=112	97	81+ 62=143	95	— 9	
58+42=100	97	97+ 27=124	96	33+ 23= 56	100		
67+42=109[9]	483	84+ 54=138	472	62+ 59=121	482		
140+46=186	91	134+ 66=200	91	72+ 58=130	91		
110+58=168	96	135+ 75=210	92	51+ 42= 93	99	269	
70+42=112	98	122+ 49=171	92	113+ 70=183	92	+10	
113+28=141	95	118+ 52=179	90	72+ 53=125	95	— 8	
124+62=186	90	80+ 46=126	96	83+ 77=160	93		
111+47=158	470	118+ 57=175	461	78+ 60=138	470		
92+99=191	91	82+ 52=134	91	195+119=314	81		
93+57=150	90	125+ 42=167	93	134+112=246	86	277	
175+62=237	92	113+107=220	88	122+113=235	88	+15	(6)—1 Pierced Case.
63+46=109	96	150+ 98=248	85	123+ 80=203	89	— 9	
110+38=148	94	145+107=252	89	210+160=370	80		
107+60=167	463	123+ 81=204	446	157+117=274	424		
68+40=108	98	116+ 36=152	93	124+ 45=169	93		(2)—10 Hangfires.
32+55= 87	98	188+ 48=236	80	70+ 46=116	95	288	(3)—Numerous Tippers.
180+57=237	90	178+ 53=231	88	96+ 54=150	92	+ 7	(4)—4 Hangfires.
66+75=141	97	80+ 27=107	97	79+ 52=131	95	—11	(7)—5 Hangfires.
66+43=109	96	74+ 37=111	97	53+ 33= 86	97		(10)—12 Hangfires.
82+45=136[10]	479	127+ 40=167	455	84+ 46=130	472		1 Misfire.
37+43= 80	99	34+ 30= 64	100	55+ 50=105	99		
35+48= 83	99	58+ 33= 91	98	37+ 50= 87	99	320	
51+35= 86	99	46+ 26= 72	100	68+ 36=104	97	+ 8	
37+20= 57	100	48+ 46= 94	99	60+ 42=102	97	— 7	
48+31= 79	100	54+ 24= 78	99	76+ 33=109	96		
42+35= 77	497	48+ 32= 80	496	59+ 42=101	488		
157+40=197	92	206+ 25=231	92	65+ 29= 97	94		
118+50=168	92	152+ 42=194	91	153+ 34=187	93	292	
70+27= 97	96	63+ 33= 96	98	114+ 30=144	97	+14	(11)—6 Blowbacks.
50+34= 84	99	110+ 35=145	92	48+ 25= 73	99	—20	
98+32=130	96	120+ 27=147	92	76+ 48=124	98		
98+37=135	475	130+ 33=163	465	91+ 33=124	485		
58+55=113	97	68+ 90=158	95	88+ 63=151	93		
52+56=108	97	132+ 67=199	91	63+ 67=130	94	310	
89+35=127	95	72+ 62=134	95	68+ 77=145	94	+ 4	
46+52= 98	99	87+ 34=121	95	43+ 48= 91	99	— 2	
70+58=128	99	78+ 52=130	93	33+ 80=113	98		
63+51=114	487	87+ 61=148	469	59+ 67=126	478		
90+60=150	94	31+ 27= 58	100	63+ 36= 99	98		
76+45=121	96	49+ 38= 87	99	42+ 56= 98	99	292	
54+36= 90	99	52+ 47= 99	96	33+ 31= 64	99	+ 6	
54+47=101	98	50+ 36= 86	99	78+ 42=120	98	—11	
48+34= 82	99	77+ 40=117	98	85+ 58=143	95		
64+45=109	486	52+ 37= 89	492	60+ 45=105	489		
58+76=134	96	49+ 41= 90	99	36+ 23= 59	100		
43+60=103	98	38+ 29= 67	100	63+ 39=102	98	287	
72+40=112	97	30+ 28= 58	100	36+ 34= 70	99	+ 8	
59+57=116	97	42+ 31= 73	100	21+ 21= 42	100	— 6	
60+45=105	98	32+ 27= 59	100	38+ 12= 50	100		
58+56=114	486	38+ 31= 69	499	39+ 26= 65	497		
62+62=124	96	175+ 66=241	90	184+ 64=248	91		
53+58=111	96	57+ 46=103	97	198+ 67=265	78	309	
87+71=158	93	68+ 55=123	96	159+ 45=204	91	+ 3	
96+88=184	92	64+ 45=109	96	78+ 25=103	94	— 4	
82+64=146	94	116+ 53=169	94	90+ 58=148	93		
76+69=145	471	96+ 53=149	473	142+ 52=194	447		

obtained with the "R" ammunition had seven rings more and thus surpassed the maximum efficiency obtained with some of the American types of ammunition.

Hence Crossman's conclusion concerning the American long-rifle cartridges must be corrected to read as follows: "The best American ammunition is just good enough to be beaten by the German 'R' mark, while the worst American cartridges are terrible."

The behavior of the ammunition in the different rifles is also interesting. In general it may be stated that heavy barrels have less effect upon the irregularities in the ammunition. The splendid performance of the light Geco sporting rifle, 28 model, is striking, which as a whole, taking the results obtained with all types of cartridges, proved to be equal to the Savage and the Vickers, and greatly superior to the original B. S. A. used for this test, and thus superior to all foreign rifles when used with the three best types of cartridges. The cheap German rifle gave almost as many series of 100 rings as all other rifles taken together.

The test shows that the German .22-caliber long-rifle cartridge, smokeless, Mark "R", is unquestionably superior to the best American cartridges of this caliber in so far as giving uniform results when used in the most varied types of rifles is concerned and that its highest efficiency is such as is seldom attained by American cartridges.

(Signed) VERSUCHS-ANSTALT.

(Table No. 2 of this article on page 23)

Does It Pay to Use Large Shot?

By CAPT. CHAS. ASKINS

HENRY SHARP, a British ballistic expert, has one set formulæ for long-range killing of game: "When you can't kill birds, because of distance, with the right size of shot, just put in a larger size and that will fix 'em." Maybe so. A Canadian of wide experience takes the opposite view, and always uses No. 7 shot for everything from geese to humming birds, and kills the geese farther than he can the humming birds. That might well be.

A couple of friends of mine went goose hunting a few years ago. The geese had been pestered a good deal, especially with headlight shooting at night, and it proved impossible to get near them. Finally, a single goose was killed from a flock, at 100 yards, using buckshot, and that was the only goose they got. A wing of that goose was broken, but the goose not hit otherwise; but, no buckshot, no geese, to a dead certainty.

I remember my first breech-loading shotgun—a good, big 10-bore. This was in a day when Fred Kimble had left his impress upon the duck-shooting army, with his long-range guns and No. 3 shot. Nobody who really knew all about it would tolerate anything except No. 3 shot. On every side, all the old-time duck shooters being in perfect agreement, I was told to use No. 3 shot, nothing larger and nothing smaller, for ducks. I was also told that I could kill ducks at 80 yards, and maybe at a hundred. I believed it; and, being a boy, capable and willing to wriggle through the grass and mud, I got a good many shots at from 80 to 100 yards, some flying, but more sitting. Oddly enough, I did kill ducks at those ranges, for every now and then when I had shot into a half acre of ducks, a bird or more would be left behind. I assumed all the blame for misses. Maybe I hadn't held right or maybe the distance had been a little more than a hundred yards.

In course of time I learned something about wing shooting, and no flock of birds was allowed to pass within that fixed distance of 100 yards without drawing a shot. Sure; I considered all misses as strictly my own fault, and most of them were. But in an evil day I fired at a duck sitting on the water, at what I considered 40 yards. I saw the charge splash water all around that duck and still he flew away. That happened some more times. That put me to thinking, and I put up broad pieces of paper and shot at them at 40, 50, and 60 yards—maybe farther. You all know what would happen with a gun that didn't pattern above 60 per cent. At 60 yards there were openings you could throw a dead cat through. Along on top of this, I sometimes got a chance at ducks when out quail-shooting with No. 8 shot; and when the birds were close, down they came, too dead to flutter. On the other hand, if I ever shot at a quail with my duck load of 3's the chances were altogether that I missed him. Right about that time I began to have misgivings about the big shot being the right thing for me, whatever Kimble may have done with them in his old 6-bore.

In those days I used brass cases and black powder, loading all my own shells. Every hardware, and every grocery store for that matter, had loose shot for sale, one size being as readily procured as another. Chances at ducks were no harder to obtain than the shot; so I started experimenting on the ducks. In order to simplify the matter, shots were taken at ducks sitting on the water only, picking out singles when I could, taking them between 40 and 60 yards. I had already resigned from the 100-yard class, you see.

This kind of experimental work lasted two or three years. I was fortunate in having all kinds of ducks in the spring of the year. Finally, I learned enough about the killing ranges of different sizes of shot; learned about all I know now. I used all sizes of pellets, from 8's to small buckshot. At length my shot sizes narrowed down to just three: 5's, 6's, and 4's. The 4's were for flock shooting and not for any other purpose, on ducks migrating, flying high and wide. The 5's, upon the whole, did the best and surest work in my gun, but 6's were nearly as good, and the best on mixed ducks containing a good many teal.

I have seen no reason for changing the conclusions reached forty years ago, for a gun that throws an ounce and a quarter or more of shot, bored to what would now be considered a modified choke, No. 5 shot will kill as far and as cleanly, taking single birds, as any size that can be had. Of course, there are other sizes of guns, and better shooting 10-bores handling heavier loads than I used. The big, modern 10-bore, throwing 1⅝ ounces of shot, choked to pattern 80 per cent or better, is exactly adapted to No. 4 shot, and will not do better with anything smaller or larger. One of these long-range 12's, 3-inch chambers, 1⅜ ounces of shot, does very well with 4's also, though I think not better than the same gun would do with 5's. Again, a standard 12, with the load that used to be common in duck-shooting—1⅛ ounces of shot—can not do better or kill farther than it will with No. 6 shot.

This reminds me that the biggest duck killing that I ever did, which occurred many years ago, was accomplished with 1 ounce of No. 6 shot and 3 drams of du Pont powder. A couple of us learned that ducks were coming in on the river. There were no cars in those days, so we drove down in a wagon, and camped. In two days we had that wagon piled full of ducks—same as a load of corn on the cob. There must have been around 1,500 pounds of ducks, because it was a load for a big mule team. We took a case of No. 6 shot loads, the only shells in stock, turned down by most duck shooters because the loads were too light. We went away leaving just as many ducks on the river as we found there; but today, on that river, it would be impossible to kill so many ducks in five years. I doubt if even the fool shooting that we did had much effect on the duck supply, however. The birds were driven out and killed off by the use of motor cars, which induced ten men to go duck hunting where one had been before. Motor cars and live-bird decoys finished the ducks on the Cimmaron River.

Getting back to our knitting, Crossman says that No. 7 shot has an affinity for a 20-bore gun. That is not far wrong. I use 6's, myself, in all sizes of guns smaller than 12's, but the 7's would do about as well, or better, if the small-bore is modified or shoots less than an ounce of shot. The 16, 1⅛ ounces, of course, is well fitted with No. 6 shot. No. 6 shot, though, is pretty well limited to 60 yards; and a handful of shot won't kill much beyond.

If Nos. 4, 5, and 6 shot are the only sizes adapted to modern guns in 20-, 16-, 12-, and 10-gauges, what about Kimble and his No. 3 shot loads? Did Kimble make a mistake? No; Kimble did not. He had a 6-bore gun. The only chance I had to learn just what Kimble's big 6-bore ought to have done was through trying out a big Greener 8-gauge. The charge was 2½ ounces of No. 2 shot, 220 pellets to the load; and that load maintained a good, round, evenly-spaced pattern at 80 yards, dense enough to kill single birds. I never had any doubt about what Kimble's 6-bore would do with No. 3 shot after seeing the performance of the big Greener 8-gauge.

If No. 6 shot will kill single birds uniformly at 60 yards in a 12-bore, and 4's will kill single birds regularly at 70 yards in a 10-bore, and at the same time No. 2 shot would only bring down an odd bird at the distance, using those guns, how much horse sense is there in the advice of Mr. Henry Sharp to use larger and larger shot the longer the range? Well, that kind of advice is not altogether foolishness.

A few of us were down on the river one day when ducks were migrating in numbers but would not decoy. Flock after flock passed us and never faltered. At last an old duck hunter said, "Now watch me pull off a stunt." A huge flock of pintails was coming, to pass us at what we estimated to be 125 yards. They were winging in pretty close formation. The duck shooter fired, and I'm hanged if two birds didn't fall out. Of course we were all curious to know how he had done it, and he told us he had fired a load of BB's, holding, as he said, 20 feet ahead and 6 feet high. We suggested that the duck shooter keep right on, since he had killed two birds to the shot and probably couldn't have done any better had the birds

(Continued on page 24)

Recoil in Revolvers and Pistols—Its Causes and Effects

By CAPT. PHILIP P. QUAYLE, *The Peters Cartridge Co.*

FEW if any of the subjects considered in the ballistics of small arms have produced so great a diversity of opinion as the effect of recoil in revolvers and pistols.

We have from time to time in previous articles, illustrated by spark photographs, attempted to show that if a pistol or revolver is once properly sighted in with a uniform lot of cartridges, the shooter will get a 10 if he holds the arm and squeezes the trigger correctly, and no amount of recoil ever encountered in practice can cause him to miss.

Fig. 1.—Shows a .38 S. & W. Special revolver at the instant in which the cartridge has been fired and the bullet is just entering the barrel. A little air and possibly some slight traces of leakage gas are just beginning to show at the muzzle. The result of the various forces acting on the piece has been to elevate the muzzle approximately .01 of an inch

The articles above mentioned were not intended to convey the impression that absolutely no recoil occurs previous to the exit of the bullet from the muzzle of the arm, since we stated at that time,* in connection with the .45-caliber Colt automatic pistol, that "the recoil takes place in accordance with the laws of mechanics applicable in such cases"—that is to say, the instant at which the bullet and powder gas start to move forward marks the instant in which an equal and opposite momentum is communicated to the piece. But since the mass of the arm is many times that of the bullet and powder charge (being approximately 90 to 1 for the .38 Smith & Wesson Special revolver), it follows that the rate of motion of the former must of necessity be quite small in comparison to that of the latter.

In so far as we are aware, there have not been available previous to this time any quantitative measurements as to the precise amount of the displacement resulting at the instant of the exit of the bullet from the muzzle of the piece. It is the purpose of this paper to explain as briefly as we can, by means of spark photographs, precisely what amount of upward motion of a pistol or revolver barrel may be expected to occur, up to and including the instant in which the bullet emerges from the muzzle, and for approximately one-thousandth of a second thereafter.

If a revolver or pistol when fired were perfectly free it would of course revolve about its center of gravity as it was translated to the rear. However, in actual practice the case is far more complicated. Thus, as the arm is generally fired by a good average shooter, it is not held in a vise-like grip, but only as firmly as may be comfortable. Hence for the first instant in recoil the piece, particularly if a revolver, undoubtedly tends to rotate about a point not far from its center of gravity. Only a relatively small amount of motion is possible in this manner before the piece starts to rotate about a point nearer the wrist, and as the recoil proceeds the forearm is involved; and hence we see that the instantaneous center about which the piece revolves moves continuously, and the radius upon which it swings increases momentarily.

If one were equipped to observe precisely the various motions of the muzzle resulting from the firing of a revolver, the cycle of events would be somewhat as follows:

1. When the sear releases the hammer the mainspring forces the hammer forward, or, in other words, tends to bring the hammer and frame together. The force of the reaction which moves the hammer forward is equal and opposite to that acting upon the frame and tending to move it backward; but since the mass and moment of inertia of the revolver as a whole are large in comparison to that of its hammer, the motion produced in the former by the hammer movement is very small. It is certain, however, that while the hammer is falling the muzzle must move upward very slightly.

2. Just at the instant before the hammer comes to rest it has acquired a considerable velocity. Hence when it makes contact, first with the primer and then with the frame, it communicates most of its momentum to the latter, and tends to counteract the reaction first produced in the frame by its falling. In other words, the impact of the hammer tends to force the muzzle down.

3. When the ignition of the powder has reached the point at which the bullet is first unseated from the cartridge case, the cylinder "sets back" or is forced to the rear against the frame. The result of this impact is of course to tend to elevate the muzzle.

4. As the bullet leaves the chamber of the cylinder and enters the rifling of the barrel, a certain amount of momentum directed forward is again communicated to the piece, tending to force the muzzle down.

5. The continued reaction of forcing the bullet from the barrel, and the gas from the barrel and cylinder joint, is of course of far greater magnitude than any of the previous, definite, but necessarily smaller, reactions.

Thus, to summarize briefly the foregoing remarks, the falling of the hammer tends to elevate the muzzle, while its striking tends to depress it. The initial recoil of the cylinder tends to elevate the muzzle, and the entrance of the bullet into the barrel tends again to depress it.

Finally, the reaction of driving the bullet from the barrel, and the gas from the barrel and cylinder joint, produces by its comparatively long-continued action a very considerably greater effect than any of the factors previously mentioned, and hence the muzzle is forced upward.

However, it is highly desirable to have something considerably more substantial than a theoretical discussion when attempting to investigate ballistic phenomena of this type.

Hence with this end in view we adjusted our spark-photograph equipment to take an ordinary series of photographs of the actual firing cycle of a typical revolver, but with this important change: A muzzle rest shown at A in Fig. I, together with a block B, supporting the butt of the piece, were provided in order to maintain the alignment of the piece and to provide an index from which the elevation of the

Fig. 2.—Shows a slightly later stage in the firing cycle than depicted in Fig. 1. The bullet is almost out of the muzzle, as may be discerned from the character of the leakage gas. The muzzle has been elevated .06 of an inch

* AMERICAN RIFLEMAN, February 15, 1926, Vol. LXXIII, No. 18, pp. 9-14.

muzzle could be measured.

It will be immediately argued by many that these very conditions vitiate the entire experiment. However, the proof of the pudding is in the eating, and, as we shall show later on in this paper, the present confection may be consumed without marked signs of indigestion.

Fig. 3.—Shows the bullet approximately 1.5 inches out from the muzzle and still being accelerated. The muzzle has been elevated .09 of an inch

It will be apparent that when the piece is supported in this manner no constraint is placed upon the upward motion of the muzzle by the forward rest A of Fig. I. On the other hand, it is not at all evident that the resting of the butt of the piece upon the block B might not seriously compromise the mechanics of the situation by preventing the butt from swinging downward when the piece is fired, and thus allowing the barrel to turn about a somewhat shorter radius.

It appears, however, that the functioning of the piece under the conditions of these experiments duplicates very precisely its performance in the field. This latter statement will be amplified presently in connection with the curve shown in Fig. V and similar data.

In these tests two sets of spark photographs were taken, in the first of which the arm was held lightly in a normal grip, such as one would use in target practice. The muzzle rested lightly upon the forward block A, and the butt of the piece was similarly supported upon the block B, shown in Fig. I. In the second set the arm was not only held as firmly as possible, but in addition every effort was made to hold the muzzle down against the forward block during the firing in order to determine the maximum deviation that one could ever expect to be exerted on the bullet in this way. It should be evident that, pressed against the blocks as this arm was in the second of these tests, the opportunity afforded of holding it down was many times that ever available in offhand shooting.

We refer now to the first series of spark photographs, in which the arm was held in a normal grip, such as one would use in target practice.

Fig. I shows a .38 Smith & Wesson Special revolver just at the instant in which the cartridge has been fired and the bullet is entering the barrel. A little air, and possibly some slight traces of leakage gas, are just beginning to show at the muzzle. The cumulative effect of the set-back of the cylinder, together with the other forces previously enumerated, has been to elevate the muzzle approximately .01 of an inch.

This print shows the large amount of gas which escapes at the junction of the cylinder and the barrel. The heavy dark circles, roughly 10 inches in diameter, are sound waves generated by the outrushing gas at the cylinder joint. After these sound waves have moved out far enough so that they are no longer subjected to the actual motion of the medium in which they are traveling, they slow down to a constant velocity of roughly 1,100 feet per second.

Fig. II shows a slightly later stage of the phenomenon than that referred to in Fig. I. The bullet is almost out of the muzzle, as may be discerned from the character of the leakage gas, but this point will be further confirmed in reference to the curve in Fig. V. The muzzle has moved upward .06 of an inch.

Fig. III shows the bullet approximately 1.5 inches out from the muzzle, which has risen .09 of an inch above the top of the muzzle block. The bullet is still being slightly accelerated.

Fig. IV shows the bullet after it has moved out from the muzzle a distance of roughly 7 inches. The elevation of the muzzle at the instant depicted in this photograph is .13 of an inch above the top of the muzzle block.

Fig. V shows a curve, the data of which were obtained from a series of spark photographs, four of which have just been described. This curve shows the elevation of the muzzle for any given displacement of the bullet from the muzzle, out to a distance of 8 or 9 inches from it.

The two spark photographs to be referred to in Figs. VI and VII were taken under conditions identical with those of Figs. I to IV, except that in this case every effort was made to prevent the muzzle from rising, by a very firm grip.

Fig. VI shows the .38 Smith & Wesson Special revolver in a position similar to that shown in Fig. I. As previously mentioned, it should be evident that the opportunity which the blocks afforded of holding the muzzle down is vastly greater in this instance than it ever is in practice, where the arm of the shooter must support the weapon unaided. The elevation of the muzzle is apparently of the same order of magnitude as that of Fig. I.

Fig. 4.—Shows the bullet approximately 7 inches out from the muzzle, at which instant the elevation of the latter, as measured from the block A of Fig. 1, is .13 of an inch

Fig. VI is, of course, a slightly later stage than that depicted in Fig. I, as may be seen by comparing the positions of the cylinder-barrel sound waves in the two instances, and in consequence it shows a slightly greater line of white between the barrel and the muzzle block.

Fig. VII shows a second photograph of the .38 Smith & Wesson Special revolver in which every effort was made to hold the muzzle against the muzzle block by means of a grip far heavier than could ever be used in target practice. The bullet in this instance has moved out approximately 4.2 inches from the muzzle, which has elevated slightly more than .09 of an inch.

We shall have occasion to refer again to Figs. VI and VII in connection with the curve of Fig. V, to be discussed presently.

It has been occasionally pointed out to us that a spark photograph purporting to show the muzzle phenomenon, but which does not at the same time show a sufficient elevation of the muzzle to bring the bullet on the target, must be quite wrong somewhere. This has been very generally regarded in the light of a settler, for, say they, "it is well known that at a range of 20 yards the axis of the bore projected, in the case of a .38 Smith & Wesson Special revolver, intersects the plane of the target 15 inches below the line of sight."

It is one of the aims of this paper to explain this anomaly, and for this purpose the data represented in the curve of Fig. V have been assembled.

The curve shown in Fig. V was constructed, as previously explained, from a series of eleven photographs, four of which are reproduced in this paper. From this curve one may read the amount of elevation attained by the muzzle for any given displacement of the bullet, from the muzzle out to a distance of 8 or 9 inches.

No appreciable error results from the backward extension of the curve to intersect the ordinate of zero bullet displacement from the muzzle.

Considering the effective turning radius of the revolver at the instant of the emergence of the bullet to be 11 inches, and the amount of the elevation of the muzzle at the same instant to be .06 of an inch, we see that, due solely to the displacement of the muzzle, the axis of the bore has been raised only 3.9 inches at the target 20 yards away. This is hardly sufficient to account for the apparent discrepancy of 15 inches between the axis of the bore and the line of sight, previously mentioned.

Fig. 6.—Shows the result of attempting to hold the piece so firmly that the jump would be prevented, or at least considerably changed. It represents a slightly later stage than that of Fig. 1

However, at the instant in which the bullet leaves the muzzle it has acquired a considerable upward velocity, even though the displacement of the muzzle at the instant of the emergence of the bullet was quite small, for, again referring to the curve of Fig. V, we see that at the instant following the emergence of the bullet from the muzzle, the muzzle is rising at the rate of .02 of an inch in the time that the bullet moves 1 inch. Hence at a range of 20 yards the bullet will have risen 14.4 inches due to its upward velocity alone, the effect of gravity to be considered later. This upward velocity of the bullet is too low to be affected appreciably by air resistance.

The average muzzle velocity of the bullet, as determined over the first 5 feet from the muzzle by our precision oscillograph equipment, was 800 feet per second. Thus, if we neglect the slight decrease in velocity over this short range, the bullet would be in the air .075 of a second while traveling from the muzzle to the target. In this time it would fall under the attraction of gravity approximately 1.1 inches.

Summing up the foregoing remarks in regard to the elevation and depression of the bullet while on the way to the 20-yard target, we have the following:

	Inches
Increase in elevation at the target due to the upward displacement of the muzzle of .06 inch =	+ 3.9
Increase in elevation at the target due to the upward velocity imparted to the bullet =	+ 14.4
Decrease in evelation at the target due to the fall of the bullet under gravitational attraction =	— 1.1
Elevation of the point of impact above the axis of the bore produced when aiming =	17.2

It is thus quite evident that by far the greatest factor in bringing the bullet up to the required point of impact in the case of revolvers is *not* the so-called actual jump or displacement of the muzzle at the instant of the emergence of the bullet, but this effect is due almost entirely to the upward velocity which is imparted to the bullet because of the sudden displacement of the muzzle. Furthermore, it should be noted that it is not necessary for the muzzle to have moved through any appreciably great distance in order to have attained a considerable upward velocity by the time that the exit of the bullet occurs. In the case of the revolver considered in this instance, the upward velocity of the muzzle at the instant of the emergence of the bullet was approximately 16 feet per second.

THE EFFECT OF THE GRIP

Many pistol shooters firmly believe that they can materially lower the center of impact of a group of shots by "taking such a hard grip on the piece as to prevent the jump."

It is perfectly true that too firm a grip will move the center of impact, but not necessarily downward; just as poor light, bad trigger pull flinching, etc., will move it, and for precisely the same reason, namely, a change in alignment.

The point is that it is utterly impossible for any man to grip a revolver sufficiently hard to prevent the jump, for if this effect could not be prevented under the advantageous conditions existing at the taking of the photographs shown in Figs. VI and VII of this paper, it is evident that the attempt would not be more successful in practice, since in this latter case the arm must support the piece unaided, and can not press it down against a rest.

Casual observation of the fact that an excessively firm grip on the butt of a revolver or pistol produces a shift in the center of impact does not necessarily prove that this shift was due to a modification of the so-called jump, any more than that it was due to a change in any one of a half dozen other factors which are equally applicable. As a matter of fact, the jump is the one thing the shooter can not modify appreciably in revolver-shooting as long as the ammunition remains uniform.

It should, of course, be realized that both the upward displacement of the muzzle as well as the upward velocity imparted to the bullet are each proportional to the energy of the particular cartridge in question. In addition to these factors, if the velocity is high a shorter time is required for the bullet to reach the target; hence it does not fall as far under the attraction of gravity. Similarly, if the velocity is low the force of gravity acts on the bullet for a longer time, and its downward fall while moving toward the target is accelerated proportionately.

By referring to Figs. VI and VII, in each of which it was attempted to hold the muzzle down, it will be seen that the upward motion of the muzzle is only perceptibly smaller than that of similar photographs in which the arm was rather lightly held, as would be the case in target practice. Thus in Fig. VII (when corrected for a slight magnification) we find that when the bullet has moved out from the muzzle for a distance of 5.27 inches the muzzle has attained an elevation of .12 of an inch above the muzzle rest. By referring to Fig. V it will be seen that this point is less than .02 of an inch below that of the piece when held as in target practice. In other words, the maximum amount by which the upward movement of the muzzle can be reduced under conditions immeasurably more advantageous than are ever encountered in practice, is approximately 14 per cent. This must not, however, be construed to mean that a change of 14 per cent in the elevation of the muzzle at a given instant will produce a change of 14 per cent in the elevation of the point of impact at the target. Quite the contrary, in fact, since as previously shown it is not the so-called jump which is most instrumental in raising the point of impact at the target, but the rate or velocity with which the muzzle moves upward, thus imparting to the bullet as it emerges the same velocity with which the muzzle moved at the time. However, in order to confirm these observations, the following firing tests were carried out:

Fig. 7.—Shows a second photograph of the .38 S. & W. Special revolver in which every effort was made to hold the muzzle down against the muzzle block by means of a grip far heavier than could ever be used in practice. The bullet is shown approximately 4.2 inches from the muzzle, which has elevated .09 of an inch

In the first of these tests the muzzle and butt of the piece

were each permitted to rest lightly on the blocks A and B of Fig. I, and the piece was held as it would be at target practice—that is to say, it was gripped firmly but not so hard as to cause trembling. Under these conditions each of four men, all experienced revolver and pistol shots, fired 10 shots.

For the second of these tests the same conditions as above were adhered to, with the exception that each man fired 10 shots holding the piece down against the blocks A and B as firmly as was possible in each individual case.

The results of these firings were computed in the following manner: The center of impact was obtained for the group that shooter A fired in the first test, in which a target grip was used. Then the center of impact was obtained for the second group of shooter A in which he attempted to hold the piece down as hard as possible. The distance between these two points as measured on the target was taken to be a measure of the maximum effect which shooter A was capable of producing in this manner.

Proceeding as above we obtained the following data:

Change in the center of impact at a range of 20 yards due to attempting to hold the piece down against the blocks in firing.

Shooter A—1.1 inches low
Shooter B—0.8 inch low
Shooter C—0.6 inch high
Shooter D—0.7 inch low

Average—0.5 inch low.

By referring to the above data we see that the average maximum amount of lowering which these shooters were able to produce by holding the muzzle down, as compared with a normal target grip, was .5 inch.

If the maximum amount of lowering of the center of impact which can be produced under the conditions of the tests just enumerated was .5 of an inch, it is a difficult matter to see how even half of this deflection could be produced at 20 yards by a target shooter supporting the piece by the unaided arm.

However, for the sake of argument, assume a man capable of such an utterly unattainable, vise-like grip as would be required to restrict the upward motion of the muzzle to, say, even one-half of the extent indicated by the above test—that is to say, the individual in question must undertake to so modify the jump as to move his center of impact one-quarter of an inch at 20 yards. The revolver capable of such precision does not exist, nor would there be any ammunition available for it if it did. As to the possibility of any man being capable of such offhand revolver-shooting or such a grip, the points are equally futile.

To recapitulate briefly the chief points of this paper:

At a range of 20 yards the distance which separates the points at which the line of sight and that of the axis of the bore projected intersect, the plane of the target varies from approximately 15 inches, in the case of .38-caliber target models, to more than 20 inches in the case of certain heavy .45-caliber single-action and double-action revolvers.

The factors which contribute to bringing the bullet up to the required point of impact may be fairly represented by the data given for the .38-caliber Smith & Wesson target revolver previously mentioned in this paper:

Range 20 yards	*Inches*
Increase in elevation at the target due to the upward displacement of the muzzle of .06 inch =	+ 3.9
Increase in elevation at the target due to the upward velocity imparted to the bullet =	+ 14.4
Decrease in elevation at the target due to the fall of the bullet under gravitational attraction =	— 1.1
Elevation of the point of impact above the axis of the bore produced when aiming =	+ 17.2

It is of course to be understood that these factors will vary slightly among themselves, due to differences in various arms and to changes in ammunition; but the order of magnitude will remain unchanged—that is to say, at a range of 20 yards the upward velocity imparted to the bullet by motion of the muzzle is by far the most important factor in bringing the bullet up to the required center of impact. The so-called jump, or displacement, of the muzzle produces but little more than one-fourth of the above amount at this range.

At ranges greater than 20 yards the bullet will of course fall for a greater distance under the attraction of gravity, and the elevation produced by the displacement will increase in direct proportion to the range.

Thus, at twice the above range or 40 yards the elevation of the center of impact due to the upward displacement of the muzzle would be 7.8 inches, or twice as great as at 20 yards. The increase in the elevation of the center of impact at 40 yards, due to the upward velocity which the muzzle imparts to the bullet, would also be twice as great, or roughly, 28.8 inches. However, the decrease in elevation of the center of impact due to the attraction of gravity would be four times as great, or 4.4 inches.

It is of interest to assume that a muzzle velocity of, say, 800 feet per second could be maintained over the first 80 yards of the range, and study the relation of the various factors above noted.

	Range			
	yds. 20 *inches*	*yds.* 40 *inches*	*yds.* 60 *inches*	*yds.* 80 *inches*
Displacement factor . . +	3.9	7.8	11.7	15.6
Velocity factor . . . . . +	14.4	28.8	43.2	57.6
Fall factor . . . . . —	1.1	4.4	9.9	17.6
Resultant . . . . . +	17.2	32.2	45.0	55.6
Pointing error (15 inches at 20 yards)	15.0	30.0	45.0	60.0

The results of this table are most interesting, and show that under the conditions considered the piece would shoot 2.2 inches above the line of sight at 20 yards, and 2.2 inches above the line of sight at 40 yards. At 60 yards it would shoot on the line of sight, or this would be its point-blank range. At 80 yards it would shoot 4.4 inches below the line of sight.

If we allow for the somewhat lower average velocity known to exist over these ranges we see that the above table agrees almost exactly with actual practice.

It will be noted that the ratio of the distance which the bullet drops due to gravity, to that distance which it rises due to the upward velocity imparted to it by the muzzle, continually increases; but the upward velocity remains the controlling factor at all distances within reasonable target range.

Finally, it has been amply demonstrated in this paper that the alibi frequently offered that a change in grip so modified the jump that a poor score resulted, can not be defended for a moment upon logical and experimental grounds. And, furthermore, when once the proper sight-setting for a given range has been ascertained, a blanket correction is thus automatically applied, and all factors remain constant as long as the ammunition does not change.

To be quite correct in our computations relative to the motion of a revolver in recoil, we should of course take account of the lightening of the piece and the consequent change in its moment of inertia as successive chambers are discharged. Thus if six chambers were loaded, the inert weight added to the piece by the five cartridges remaining in the chambers and effective in reduc-

(Continued on p. 44)

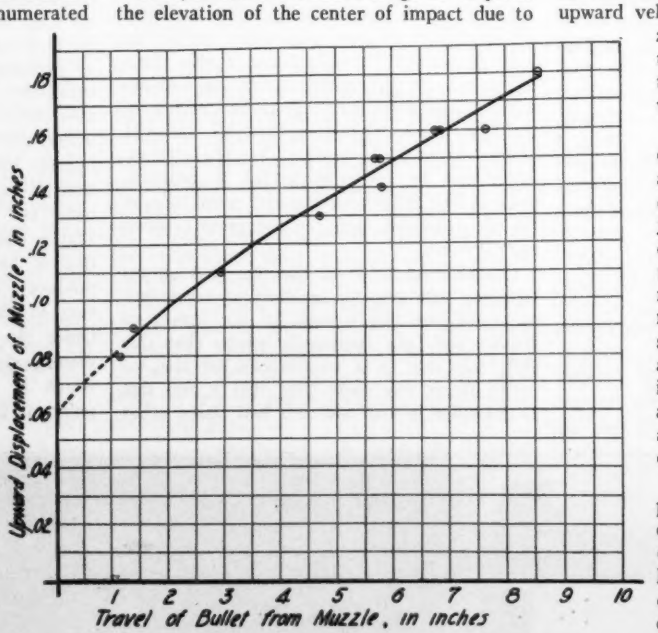


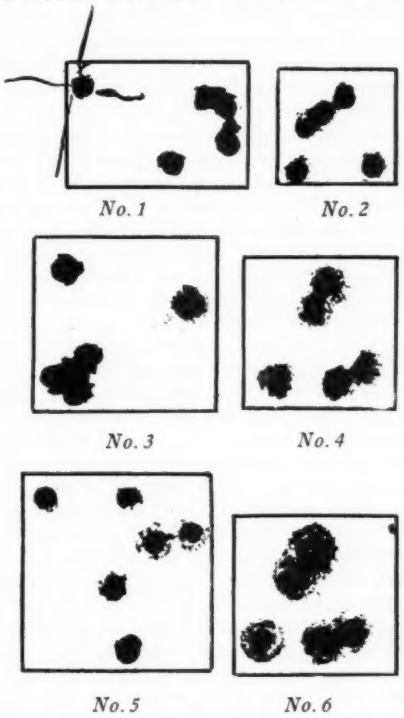
Fig. 5.—This curve shows the relation between the elevation of the muzzle and the position of the bullet while moving over the first 8 or 9 inches from the former. The data from which this curve was constructed were obtained from a series of instantaneous spark photographs. Each point marked on the curve represents a separate photograph

A Few Good Loads for the .25 Niedner Special

By BUD DALRYMPLE

A FEW years ago I had the Niedner Rifle Corporation build me a Krag-Niedner .25, and it proved to be a very fine shooting arm. The same shells could be reloaded at least 100 times or more, thereby cutting down expenses considerably for one who fires a good many shots in a year—say from 5,000 to 8,000 or more. So when another fellow, who is fully as much of a rifle bug as I am, or worse, decided that he just had to have my Krag-Niedner, I finally consented to let him have it for the number of real American dollars that we both were satisfied to let go and take. Of course, I had to have another Niedner; so I boxed up my pet Springfield action and headed it by express for the Niedner rifle factory, with pleadings to Mr. Niedner to put a barrel in that action that would puncture bull's-eyes no matter how small or how far away, and whether I held true on said bull's-eyes or to one side. I had him put in a 24-inch straight-taper barrel, chambered close for the .30-06 case, necked down to .25 caliber; and as soon as the rifle came back I put on my Malcolm 4-power scope with cross hairs and fine dot on center of cross, loaded up some shells with several different kinds of powder, and began testing the combinations out. I made some groups that were what I would call fair but not good; so I decided that I had not yet struck the right kind of powder or bullet for best results, and I tried another kind. I would punch the tack through the center of the target once in a while, then the next bullet would land, say, 3 inches or more to the east, west, north, or south.

Well, I tried du Pont Nos. 15, 15½, 17½, 1147, 1204, and 80, and Hercules Nos. 308 and 300; Remington 60-grain Hi-Speed, 87-grain Hi-Speed, 117-grain Express, and 117-grain old-style .25-35 bullets, and I loaded the cartridges with light loads, medium loads, and with as heavy a charge as the pressures would allow. I know I was holding that sight just as square on the mark as when I used to roll coyotes at 400 yards for Uncle Sam with my Krag-Niedner .25, and believe me or not, those darn bullets simply romped all around the target. Well, occasionally I would put two or three in a small space to one side of the darn bull's-eye; then I would move the windgauge accordingly; but that didn't help matters, and I was getting wider and higher groups all the time. I would look the mounts over, then examine the bore, and everything looked fine as frogs' legs. I would shoot after breakfast, till noon; then I would swallow a few anchovies, grab that pet (?) rifle, and out I'd go; and with my belly in the mud (guess that's what they call "prone") start hitting (?) the bull's-eye. I'd blaze away until supper time, just stopping to load more bull's-eye punchers when my cartridges were empty; but alas! those bull's-eyes would have had to be thick as warts on a toad for me to hit them. And here's the joke: After burning up several hundred rounds of good ammunition and several thousand ounces of good temper, I discovered that the base block of the front scope mount was loose! When I cut the dovetail slot, I cut it too deep, and the side lips of the block rode too tight and raised the underside of the block up just enough to cause it to be loose, and nearly every time I fired the rifle the scope would move a little. Anyone who has mounted a lot of scopes and used them for over twenty-five years knows that the mount does not need to move much to cause the arm to shoot several inches off at 200 yards. Quite often in sighting-in a rifle with scope, I will use twenty-five or more cartridges before I get it properly zeroed.



No. 1 *No. 2* *No. 3* *No. 4* *No. 5* *No. 6*

Well, I took that confounded mount base off and fixed it back on solidly, and the .25 Niedner-Springfield began to throw the bullets as I figured it should. I have been doing some real shooting with it, and thought perhaps some of the shooters would like to know how this .25 Special load performs. Now you must not expect gilt-edge targets or extremely small groups from any barrel fired under conditions such as these groups were fired under, as I had no fancy rest; nor did I have fine powder scales that weigh to within 1/10 of a grain. But I loaded each cartridge carefully, and think the accompanying targets show that the rifle shoots very finely. The action handles the cartridge perfectly; and in all the loads I have tried, except those loaded much below the required pressure, the powder burns O. K. Even du Pont No. 1147 seems to burn very well in this .25-caliber barrel, and gives good groups, although the pressure appears higher than with some of the other powders. I ran out of du Pont No. 15½ and also Hercules No. 300 before I discovered the loose mount base, so could not test these powders out fully, but I feel sure that both of them will work O. K. in this .25 Niedner Special, and have ordered some more of both.

Du Pont No. 1204 groups the 87-grain Remington .25 Hi-Speed bullet well for a few rounds; then all at once it throws one wild. It is the only powder that I tried that worked wrong. I tacked a sardine box on a post at a distance of 160 yards, and fired five shots at it with No. 1204, using 30 grains and the Remington .25 Hi-Speed 87-grain bullet, and hit the can well toward the center. One shot landed fully 4 inches high, and I thought I held well. Perhaps the bullet was a fluke, or maybe I was; but I tried the same powder in a reduced load with the .25-20 (common) soft-point bullet, and the second shot printed 2 inches off at 75 yards; whereupon I unloaded the other three rounds with a bullet-puller. As it was raining some when I fired groups No. 1 to No. 10, I fired these groups from inside the garage, so as not to get the rifle and scope soaked, and I used a sack of crushed rock for a back support, resting the muzzle over a wooden box with a pad on top. The rifle was fitted with plain single trigger, with light pull, Malcolm 4-power scope, and with fine dot on center of cross hairs.

Target No. 1, from outside of bullet holes, measures ¾ x 1⅛ inches; and the one bullet hole marked X was not a wild one; but I moved the gun just as I pulled, and called the shot before I looked through the scope. This otherwise would have been my best group, and it shows the load to be a really accurate one. This load prints 3½ inches low at 75 yards with sight set for the full-power load at 150 yards, but it lines up very well, and would be a fine load on small game. It consists of 15 grains No. 80 and 87 grains Remington Hi-Speed bullet. Range, 75 yards.

Target No. 2, same load as above, measures ¾ x ¾ inch, and seems to show that No. 80 is the real powder in this barrel and cartridge for a light load.

Target No. 3 measures 1 x 1 inch, and it also groups about 3½ inches lower than the full-power load, and is not quite as accurate in this barrel and cartridge as No. 80. The 60-grain Remington Hi-Speed bullet was used for this load, with du Pont Shotgun Smokeless.

Target No. 4 measures 1 x 1 inch. This load shoots right up to line, and is a real one for coyotes up to 500 yards or more. The load is very clean, and the recoil not heavy, but it seems to cause cases to extract

a trifle hard; otherwise I like it fine. The Remington 87-grain Hi-Speed bullet was used, driven by 42 grains No. 1147.

Target No. 5 measures 1⅛ x 1⅛ inches; and while this load has some recoil, owing to the heavy bullet (117-grain), it does not appear to put too much strain on the cases, and would be a fine load for large deer, small bear, elk, etc., as it mushrooms perfectly and still plows deep, leaving a terrible hole behind it. I find this bullet fully as accurate in this .25 Niedner-Springfield as the Remington .25 Express 117-grain bullet, and the light jacket certainly holds, else it would not group as well as it does. This load employs 37 grains No. 17½ and the 117-grain Remington soft-point bullet.

Target No. 6 measures ⅞ x ⅞ inch, and was made by the same load as No. 4.

Target No. 7 measures ⅞ x 1¼ inches, one bullet just touching the top of the target. This should give good groups at long range. The load consists of 38 grains No. 1147 and 117-grain Remington full-jacketed bullet.

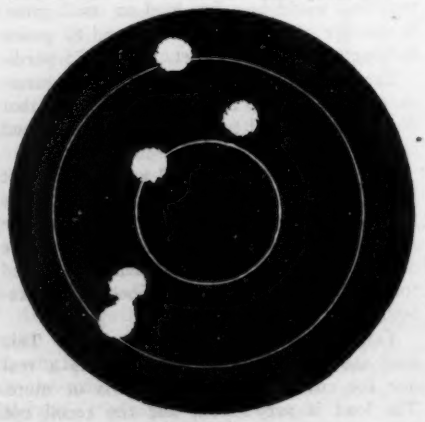
Target No. 8 measures ⅞ x ⅞ inch, and is the same load as Nos. 6 and 4. All above groups made at 75 yards.

Target No. 9 at 125 yards, prone and sand-bag rest for muzzle, measures 1¼ x 2 inches, and seems to be a good load. Forty-three grains No. 1147 and 87-grain Remington Hi-Speed bullet.

Target No. 10, 125 yards, 10 shots prone with sand-bag rest. One bullet slipped through another hole so closely that you can not tell which place it landed; but it looks as if it went in the 10-ring at bottom. This load, of No. 17½ and also No. 1147, seems to be about equal in this barrel. The load is 43 grains No. 17½ and 87-grain Hi-Speed bullet.

All the bullets used in this test cost around $8.50 per 1,000. The 60-grain Hi-Speed bullet used in target No. 3 is pretty light for any but the smallest game. I suppose it would work O. K. on chucks and light game, but it is so short that it can not be loaded in this .25 Niedner-Springfield case so that it will seat in the lands before being fired; hence it should not give the best results.

I used no dope to clean the bore of the rifle after firing these loads, and the bore cleaned fine. I am more than pleased with



No. 9

No. 7

No. 8

my Niedner-Springfield .25, and am sure that the long Springfield case gives fully as good accuracy in this barrel as the Krag case did in my other barrel. And as I have also shot a Niedner barrel chambered for the .25 Roberts shell some few hundred times, I feel sure that this barrel of mine chambered for the .30-06 case necked down to .25 caliber suits me fully as well. While firing these ten groups I fired only two more, which were with No. 1204; and each had a real wild shot, so I discarded them.

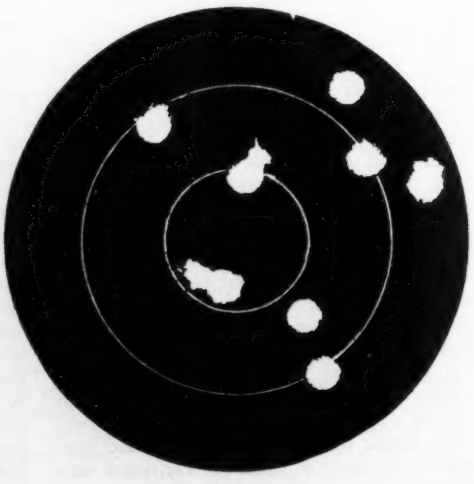
A scope with plain fine cross-wire graticule would, no doubt, have given a trifle better groups; but as I use this arm on game, and as a plain cross-wire graticule is positively no good on moving game, I have had the Malcolm company make a fine dot on the cross hairs in all the scopes I sell for use on game. I worked up this dot sight for the Malcolm company some twenty years ago, and after testing it out on running wolves, coyotes, bobcats, deer, and jack rabbits, I believe it to be far superior to any other graticule I have ever used on moving game; and if the dot is not too large, it is a very good sight for target use also. Of a good many scopes that I have mounted for our Government hunters, all were fitted with this dot graticule except one, and that scope was returned to me. When you are shooting at moving game you can not hunt for the center of a plain cross wire; you must have a sight that shows plainly, and one that at the same time does not cover up too much of your target; and that dot being, say, twice the size of the fine cross wire, all you see is the dot and your game. And when that dot is on the game, that is where your bullet will land if your rifle throws them true and the range is not too great.

While hunting predatory animals for the Government, using the Krag-Niedner, I kept the rifle sighted for 250 yards point-blank, and many a coyote that was stepping it off on high at from 150 to 350 yards bit the dust at my first, second, or third round. No; I didn't hit them all, but I did hit a good many. The boss, then Mr. C. J. Bayer, was at my camp one day. When he left I had some business the same way he was going, so I took my car and followed him; and as we crossed a prairie-dog town, which is a fine place for coyotes, we saw a coyote, and I wanted Mr. Bayer to try his rifle on him, but he insisted that I shoot him. Mr. Coyote was hurrying along at around 300 yards, but going nearly straight away, making an easier mark. So I sat down and pulled down on him and got him with the first round; and I have killed a lot of them when they were running sidewise or quartering, which makes a much harder mark. It takes practice, of course, and also a good, flat-shooting arm and a good sight, and I had all these requirements, especially the practice.

I use, for my hunting in timber on big game in the fall a Zeiss Zielklein 2¼-power scope with No. 5 graticule with a fine dot or ball on the center of the fine cross wires, and it fills the bill O. K., as the Zeiss scope can be mounted so that it has much greater eye relief than the Malcolm and still gives the required large field, which we must have for moving game in timber or brush. Some will use a scope mounted on the side, and leave the other sights on the rifle; but not for me. I want my scope mounted top center, and as low as the action will allow; and on Winchester Model 54, Savage Model 20, and Springfields, I always turn the bolt handle down so as to allow the scope to be set down where it should be. Before starting on a hunt, target your scope in for, say, at least 150 yards; then leave it set there, until you return, at least. Don't monkey with the windgauge, as you will have it out of line all the time if you do; and furthermore, don't try to use three or four different weights of bullets and expect to hit the game. It simply can not be done, as each weight of bullet will not only strike higher or lower at, say, 200 yards, but it may shoot to right or left. It has cost me many, many thousand rounds to find this out, and I gladly pass it along to help out the inexperienced hunter.

Now a few words in regard to kinds and weights of bullets best suited for different game in these Niedner-Springfield .25-caliber rifles may not come amiss. I will cite a few results obtained with different bullets on small and large game with my other Krag-Niedner rifle, which was close-chambered for the .30-40 case, necked down to .25 caliber, for shooting coyotes, bobcats, and small deer. I found that the 87-grain United States Cartridge Co.'s soft-nose pointed bullet at

(Continued on page 23)



No. 10

Table No. 2

Cartridges	Score for 50-shot target: Winchester M. 52	Savage	Springfield	B. S. A.	B. S. A. German barrel	Geco 28 No. 2002	Vickers	Score for 350 shots	No. of 10-shot possibles	Highest score	Lowest score	Difference between highest and lowest score
"R" Rauchlos	488	482	488	491	497	496	488	3,430	5	497	482	15
Winchester Precision 200	485	486	475	483	486	499	497	3,411	7	499	475	24
Winchester Lestayn	477	471	472	457	486	492	489	3,354	1	492	457	35
Remington Kleanbore	483	475	475	480	483	472	482	3,350	1	483	472	11
Remington Palma	489	464	476	467	487	469	478	3,330	..	489	464	25
Peters Rustless Semismokeless	481	470	482	467	475	465	485	3,325	..	485	465	20
U. S. N. R. A.	490	463	482	480	471	473	447	3,306	..	490	447	43
Peters Rustless Smokeless	456	476	478	463	471	478	477	3,299	1	478	456	21
U. S. Self-Cleaning	489	467	471	462	470	461	470	3,290	1	489	461	28
Winchester Staynless	446	483	465	448	479	455	472	3,248	1	483	446	37
Western Noncorrosive Smokeless	470	473	477	457	463	446	424	3,210	..	477	424	53
Score for 550 shots	5,254	5,210	5,241	5,155	5,268	5,206	5,209					
Highest score of 50 shots	490	486	488	491	497	499	497					
Number of 10-shot possibles	1	1	1	1	2	7	4					

A SMALL-GAME EXPRESS RIFLE

(Continued from page 9)

to the scope I hit the bull dead center at 100 yards. At 50 yards the bullets strike ½ inch above the point of aim. With a C of .215 for the Niedner bullet, and taking 2,500 f. s. as the probable velocity, I worked out an angle of elevation of just 3 minutes for 100 yards, and a trajectory of ½ inch at mid range when sighted for 100 yards. From this I fancy the velocity lies between the figures before mentioned, namely, 2,400 and 2,500 foot-seconds at the muzzle, which is going some for this bully little shell. It certainly shoots as if it had plenty of velocity; and the targets obtained have always been remarkably uniform and consistent from day to day. It seldom gives groups larger than 1½ inches at 100 yards, and usually less; and the zero has not changed in elevation or windage since originally set, which speaks well for the combination. It is not necessary to warm it up, as we have to do with our rim-fire rifles. It gets going at once, and in this respect simulates a fine match rifle of caliber-.30 persuasion.

The barrel is only 23 inches long, and comparatively light; but it groups so much better now than in its original form as a rim-fire piece that I marvel at it every time it is used. This feature is particularly in evidence at 100 yards, where it has yet to throw a group larger than 2 inches. This point is interesting, to say the very least. The rifle with scope attached weighs just 10 pounds.

In cutting the throat or bullet seat it is best to use a loaded cartridge as a guide; and when this loaded round enters easily, and just shows the marks of the lands on the bullet, it is time to stop. By covering the bullet with smoke from a match the imprint of the lands can be clearly observed. I managed to cut my lead too long, becoming a little impatient, as it were, but as far as I can observe it has produced no ill effects. However, when this barrel wears out, and from the looks of things that's going to be a very long time from now, I shall use more care upon this delicate and very important job.

Barrels should of course be of Ordnance steel or nickel steel. Soft-steel barrels are to be avoided. I judge the pressures are in the neighborhood of 35,000 pounds to the square inch as a maximum. Extraction is always easy, and I have never yet had a punctured primer since the correct form of striker was fitted.

I do not consider this a target proposition, and it was not worked up with that feature in mind, although it certainly makes the finest long-rifle stuff look sick. I fired it once at 200 yards, 10 shots, and got a target rectangle of 3⅜ by 4 inches; and this, too, in a rather difficult wind. The little bullet loses velocity very rapidly after passing the 100-yard point, as is to be expected; but even so, the way it cut down elevation at 200 yards was a caution. It really is a straight small-game express proposition, and for that purpose is very nearly ideal. It is cheap to load, easy to load, and its accuracy is superb. In many ways it has proven the most satisfactory small arm I have ever played with, and has produced more pleasure for the time spent upon its get-up than anything I have tinkered with in many, many years.

Here is a case of a so-called obsolete shell being brought right up to the minute. Much do we riflemen owe to our splendid powder and ammunition manufacturers, with their fine bullets and remarkable primers.

If you want some fun, and a bully, fine little rifle, try what I did, and see for yourself.

A FEW GOOD LOADS FOR THE .25 NIEDNER SPECIAL

(Continued from page 22)

around 3,000 f. s. was very good; and I also did good work on coyotes and cats with the common .25-20 Western Lubaloy soft-point 86-grain bullets at the same speed, but these did not perform so well against the wind, or in a side draft, or at long ranges, as the flat-point offered too much air resistance. But oh, boy, how they did explode prairie dogs at 100 yards! It would cut their heads clean off, and sometimes parts of the head would fly fully 30 feet.

Now we used a good many wild horses in Wyoming for coyote bait, and these animals are wild as a scared deer and very hard to kill. I found that the Western Cartridge Co.'s 100-grain open-point bullet, driven as fast as pressures would permit, worked very well. One horse I shot with this bullet was broadside on at around 300 yards, and the bullet struck center, going through the edge of his heart and lodging under the skin on the opposite side. He went only a few yards. I killed a large bull elk with this same kind of bullet, but he was running from me at close to 250 yards for the first shot, and I had to shoot at his rear end. The bullet struck him in the left hip and plowed through, not striking the heavy bone. The elk then turned and trotted quarteringly from me, and I placed two more bullets back of his shoulder, which put him out. I think the Remington .25 Express 117-grain bullet would be a very good bullet on large game in this .25 Niedner-Springfield, as it seems to mushroom O. K., and has the weight. Also the common .25-35 or .25-36, or better still, the .25 Remington old-style 117-grain soft-nose, on account of the round point, would be good on large deer, as a deer's skin is thin and a bullet should mushroom easily. But on a wild horse or elk this bullet might upset too soon. The Western Tool & Copper Works bullets are good on thick-skinned or tough animals, but they do not mushroom quickly enough on coyotes, or even on small deer.

I am a firm believer that it is best to use on heavy game a bullet of some weight, and push it along just as fast as pressures will permit. Then when it lands there is some punch or shock. When I worked up the .25 Hi-Speed load for the Remington company I didn't claim it to be a good load on large game; but I did claim, and still maintain, that for the kind of game I designed it for this is a fine little bullet. I used this Hi-Speed load in my Remington Model 8, .25 caliber, several months before I got the Remington company interested enough in it to start making it; and here is what I did: I bought the Savage 87-grain bullets made for the .250-3,000 Savage, and loaded them into the .25 Remington cases. Then later I had a .25 Remington Model 8 barrel rechambered for the .250-3,000 Savage cartridge. It shot O. K., and the ammunition functioned in the arm O. K.; but the fellow who rechambered it got the chamber too large, so that it would split one-half the cases when fired. I guess he was afraid a close chamber would run the pressure too high. I immediately returned that barrel to him and told him he had raised the devil with my Remington chamber, and to send me a new barrel for the regular .25 Remington

cartridge, which he did. Then I sent two or three boxes of my hand-loaded .25 Remington shells with the Savage .250-3,000 87-grain bullet in to the Remington plant, as they had recently advised me that they thought my new load would give too high pressure in the Remington .25 automatic, but that they would test them out. I didn't have any such testing machines along with my wolfing layout. The first .25 Hi-Speed bullets Remington made were too flat-pointed; and the ones they sent me to test out in my .25 Remington would sometimes jam, if fed slowly by hand; so I took a file and rounded the point a little on some of them, and returned them to the Remington company, and they are now O. K.

I forgot to mention that the last 2,000 Remington .25 Hi-Speed bullets I got measure a trifle above the United States Cartridge Co.'s 87- and 100-grain bullets, and they fit the fired .25 Niedner-Springfield cases without resizing the neck of the case, which is a good feature, as resizing a case does it no good; so I will use the Remington bullets. One hundred cases will burn a good many thousand rounds of powder in a Niedner-chambered barrel, and I doubt if even Cordite would eat or split them. No; I'm not going to try it in my Niedner, but I have shot a lot of it in Krags, loaded it myself, and it gives a good account, too.

DOES IT PAY TO USE LARGE SHOT?

(Continued from page 16)

been right on top of him. He refused, saying that even BB's, striking with a single pellet, couldn't be relied upon to stop a duck at such a distance, and that more than likely other birds were struck that did not fall. The point I am trying to bring out is that things can possibly be done with big shot that can not possibly be done with small shot, if the range is great. No doubt some such condition is what our English friend has in mind when he advises large shot, even to small buckshot, for birds might be killed from a flock with such shot, when no birds whatever were to be had in any other way.

On one occasion two of us went high up on the South Canadian River. The river was a mile wide—just a bed of sand with a little water in spots—and the geese stayed in about the middle of it. After trying to get shots at those geese for two days, we filled up the magazines of the old Winchesters with round-bullet loads, got within 200 yards of a big bunch of geese, and turned loose. The bullets struck the sand and ricocheted into the geese. When the guns were emptied two geese were left on the sand, which shows what can be done in an emergency with big shot.

Is that kind of goose-shooting good sport? Is any kind of flock shooting good sport? No; I guess not. My grandfather used to tell of deer-shooting in Illinois in an early day. One of the hunters had somehow or other gotten hold of an old muzzle-loading 4-bore. He charged it with about 4 ounces of buckshot, and according to the story, could kill deer at 200 yards, when the rifles mostly missed above 100. Grandad said that you could see those buckshot begin to strike the ground and cut dirt all the way from a hundred yards down to the deer, but the deer would be hit. Riflemen became bitter about the work of that squaw gun.

Now, then, the question comes up: what makes us shoot ducks, anyhow? I do it to test my marksmanship, and not because I care a whoop about the ducks. If marksmanship is to be tested, the range must not be so great that the bird will be missed regardless of the accuracy of the hold—that is, if the load is to shoot all around the duck and not hit him, and we, not having visible shot, can't tell the cause of the miss, the whole thing becomes exasperating. Taking this view of it, it is never wise to go beyond the patterning range of our gun and load.

How far can patterns be guaranteed to strike a goose? At Camp Perry in 1924 a trap-shooting tower was erected about 200 yards—precisely 200—from the regular traps, and directly in line with the flight of the clays that were being shot. A few of us were at the tower, and we soon learned that every time a clay bird was shot at in our direction, the nearly spent pellets struck us. A man could stand in the right place and just about bet that some pellets would strike his hat; or maybe his neck, and sting slightly. Therefore those trap guns with 7½ shot would have struck a goose at 200 yards, but without force enough to make a snipe wiggle his tail. There is your problem. How far could you hit a snipe with No. 7½ shot hard enough to bring him down? The farthest that I ever saw a snipe killed was about 70 yards. How far would this load kill a duck? I'd say 50 yards, with some birds crippled beyond 40 yards. We might shoot at ducks all day with No. 7½ shot at 70 yards, hit every bird, and not bring one down, because we have passed our limit of striking energy. By the same token, we might fire at single ducks all day, with buckshot, at 100 yards, hold every shot true, and never hit a bird, because we were far past our pattern limitations.

Speaking of pattern limitations, once upon a time my brother and I, about eight and ten years old, respectively, had a little 20-bore muzzle-loading shotgun. We had no shot, but had .36-caliber revolver bullets that my father had moulded for a Colt pistol. We loaded four pistol bullets to the charge. The old dog treed a gray squirrel in the top of a tall black oak tree, where he curled up in plain sight. We had forty pistol bullets; shot them all at that squirrel. The limbs were cut all about the gray, but he never moved. Then one of us climbed the tree and scared the squirrel out, and the dog caught him. You see, we were beyond the pattern limitations of our four-bullet load. If we'd had a big gun, and put in twelve bullets to the load, we might have killed that squirrel.

Taking 12-bore guns, I'd consider the safe limits of pattern on ducks, singles, with buckshot, as about 30 yards; BB shot, 40 yards; No. 1 shot, 45 yards; No. 2, 50 yards; No. 3, 55 yards; No. 4, 60 yards; No. 5, 65 yards; and No. 6, 70 yards. This is merely a statement, and I am not going to attempt to prove it scientifically. No. 8 shot would hit a duck at 100 yards, but he wouldn't know it; and you wouldn't know it, either.

For the other side of the question—striking energy—we can not do better than to look at a table issued by the du Pont company. This gives the striking energy of various sizes of shot, running from 2 to 7½, but not including No. 3 shot, which is not in common use. The load was the equivalent of 3¾ drams of powder, 1¼ ounces of shot, muzzle velocity 1,444 feet, 12-gauge gun. Remaining striking energy, foot-pounds, per pellet:

Shot size	10 *yds. ener.*	20 *yds. ener.*	30 *yds. ener*	40 *yds. ener.*	50 *yds. ener.*	60 *yds. ener.*
No. 2	16.	12.	10.	8.60	7.30	6.50
No. 4	10.	7.50	6.10	5.10	4.40	3.70
No. 5	7.90	5.80	4.80	3.95	3.30	2.85
No. 6	5.90	4.30	3.50	2.90	2.40	2.00
No. 7	4.25	3.15	2.50	2.00	1.62	1.34
No. 7½	3.50	2.65	2.05	1.70	1.38	1.10

If we arbitrarily take 1½ pounds as the required pellet energy, which is commonly accepted, then the 7½ shot will have enough energy to kill at 40 yards; No. 7 shot at 50 yards; and No. 6 shot at 60 yards. Pellet energy is not a perfect measure of the killing qualities of shot, because large shot carry more shock, regardless of the theoretical energy; but energy is really the only scientific measurement we have. It is to be seen that No. 4 has more energy at 60 yards than 7½ shot has at 10 yards; hence the importance of using as large shot as patterns will permit.

It will be observed that No. 6 shot have almost reached their energy limitations at 60 yards; in fact, this 60 yards is usually set as a limit beyond which No. 6 should not be used. No. 5 shot will go farther, up to about 70 yards; hence this size is favored by many for maximum range in a 12-bore gun on ducks. This 12-bore charge, as mentioned, is given a muzzle velocity of 1,444 feet. The 10-gauge is given a muzzle velocity of 1,548 feet in these tables; but at 60 yards the striking energy per pellet of No. 6 shot is only 2.2 pounds, as compared with 2 pounds for the 12, at its given velocity, indicating that the augmented velocity of the 10 is of rather minor importance with shot as small as 6's, and distances as great as 60 yards. Large pellets, of course, would maintain their momentum better.

Now, then, what is to be gained by the use of larger shot than the number of pellets in the charge, and the pattern, will warrant? Well, if ducks are so wild that there isn't a chance of getting a bird within decent range; if the game bag is to go back empty otherwise—then there is always a chance that a bird can be killed through luck, accident, and design, by cutting loose at every flock that passes within 100 yards, using shot so large that one pellet should kill if it hits. As my grandfather used to say, shot have to land somewhere; so why not on the duck? Is that good sportsmanship? Well, you try it in the presence of some old duck hunter, and he will tell you better than I can.

Sportsmanship in Postal Matches

By M. A. RECKORD

PRESIDENT HOOVER, in addressing the Boy Scouts recently, said: "The Boy Scout movement, by the promotion of a sense of sportsmanship, builds character. Contest and competition with zeal but without unfair advantage and without bitterness; restraint that remarks nothing of others which can not be at once forgiven; willingness to subordinate one's self into the teamwork for the common aim—that is, sportsmanship."

Some may brag about their honesty and proclaim their sportsmanship. But true sportsmanship is always an inherent quality—something to be taken for granted as part of the game.

It is, therefore, greatly to be regretted when we discover a contestant in a rifle match who has not conducted himself in accordance with the rules. It brings us to a realization of the fact that the Matches can be beaten by collusion between the firer and the man who signs his certificate—there is no way to prevent such an act if the men concerned will stoop to such methods to win. The N. R. A. has endeavored to safeguard these matches—to protect the honest contestant. To that end this Association has adopted the following rule:

"OFFICIAL SUPERVISION.—For the protection of individuals and clubs, and for the purpose of maintaining the highest possible standard in all National Rifle Association matches, this Association reserves the right, at any time, to send a representative to witness the actual firing by a competitor or competitors, and further to require any competitor or competitors making abnormally high score or scores, to shoot substantiating scores. Should the substantiating score or scores, in the opinion of the National Rifle Association, fail to approximate the original score or scores reported, or should the competitor or competitors refuse or fail to refire when requested, the National Rifle Association reserves the right to disregard the score or scores reported and take whatever additional action is deemed necessary to safeguard the proper conduct of the matches."

This rule is designed to give the N. R. A. the right at any time to have a representative present and, whenever it is deemed necessary, to compel a contestant to refire a match; in other words, to fire substantiating scores. It is not the desire of the N. R. A. to be severe or harsh, but the matches must be safeguarded; they must be conducted upon a sportsmanship basis. There is no place in them for any but the honest contestant—the crooked and unworthy must be eliminated. It is for that reason that this office has recently taken action in five cases, in one of which a contestant was expelled, in another a contestant suspended for one year, and in the other three cases, substantiating scores required. It is the earnest hope of this office that the action taken may be a deterrent to any others who may be inclined to take undue liberties with the rules. Only in this manner can the game be safeguarded and the crooked shooter eliminated.

The five cases in which the N. R. A. has recently been called upon to take corrective measures are: Henry C. Wright, of California, Leon Hauser, of Illinois, Joseph Smith, of New York, James Butterworth, of Illinois, and R. H. Taylor, of Missouri.

In the Henry C. Wright case the charge made in a competition between the Fresno Rifle Club and the Dinuba Rifle Club, both of California, was that Wright substituted targets. This case was thoroughly investigated and the evidence proved conclusively that the substitution was made and with intent to defraud. The Fresno Rifle Club has expelled Wright from the Club and the Executive Committee of the N. R. A. has expelled him from the National Rifle Association.

In the Hauser case, it was shown that Hauser placed three target cards together and from the prone position, fired through the three cards at one and the same time. He then marked the cards, one prone, one kneeling and one standing, and submitted them in a Junior Qualification Match. Because of the immature age of the boy, the Executive Committee did not expel him, but has suspended him for one year from participation in N. R. A. competitions.

In the case of Smith, he entered six N. R. A. Postal Matches and his scores were so abnormally high that they were protested. Request was therefore made that Smith shoot two of the scores over, which he did, and in one match he dropped 27 points and in the second match 54 points below the original reported scores. He was then asked to refire the six matches in the presence of a representative of this office, with the result that he dropped 51 points in Match No. 1, 33 points in Match No. 2, 72 points in Match No. 3, 41 points in Match No. 4, 27 points in Match No. 5, and 134 points in Match No. 6. These scores are considerably below those originally reported. The original scores have, therefore, been disallowed and the above-mentioned scores have been accepted.

In the case of Butterworth, firing in a 4-position 50-foot Junior match, his scores as originally reported being abnormally high, a total of 394 out of a possible 400 in four positions, and the scores having been protested Butterworth was requested by this office to refire the match in the presence of a representative designated by this office.

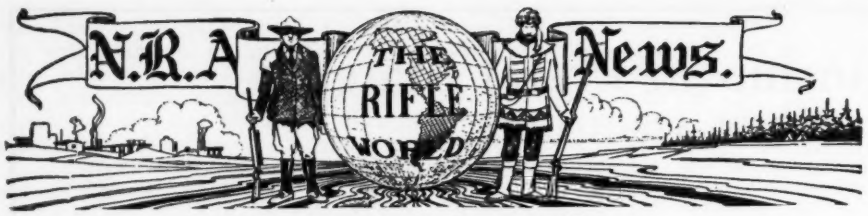
Butterworth fired substantiating scores, but while the scores were not particularly good, the conditions were exceedingly bad because of change of light, rain, and a very sudden and radical change of wind. Because of these facts and a desire on the part of the Executive Committee to be fair and equitable, the Committee has disqualified Butterworth on the technical ground that one of the witnesses was not actually on the firing line but observed the firing through a window at a distance of about 200 feet and that neither witness weighed the trigger pull or measured the distance of the range.

In the two cases of Smith and Butterworth, while the substantiating scores do not prove that these two competitors did anything wrong, and the N. R. A. has not accused them of so doing when they originally fired the matches, they indicate that the original reported scores were abnormally high for these two men and the N. R. A., therefore, feels warranted in refusing to consider the original scores.

In the case of Roger H. Taylor, who turned in the unusually high score of 589 x 600 in the Individual Collegiate Match, this score was substantiated by Capt. Gilbert E. Parker, Inf. (DOL), coach of the Rifle Team at the University of Missouri, who certified that Taylor's score was in keeping with his average for the year. Mr. Taylor is no longer in the University, and for that reason could not refire under the old conditions; hence, his original score in the College Match has been allowed to stand. In this connection, the following record of Mr. Roger H. Taylor, furnished through courtesy of Captain Parker, is of interest, and in the opinion of the N. R. A. is sufficient to warrant us in accepting Mr. Taylor's score of 589:

1928—National Tyro Individual Championship.. 573
1929—Intercollegiate Individual Championship .. 577
1930—Member Championship, Two-Man Team... 580

When you get to the very rock bottom in this matter, the essential and truly significant thing is not the fact that a match is won or lost, but that some contestants are willing to win by underhand methods. The essential and significant thing for us to consider is that when these facts appear, there is no one who arises and says with conviction, "These conditions do not exist." Nobody says that, because there is a feeling among the honest shooters that there are a few dishonest men in the game. Because of this fact, the N. R. A. is justified in taking summary action and suspending or expelling any and all who fail to play the rifle game according to the rules and the dictates of good sportsmanship. We intend to make and keep the matches clean and upon a high plane. There is no place in the N. R. A. matches for a dishonest shooter, and it is our desire to eliminate such from the rifle game. To this end we request the loyal support and assistance of all honest shooters.



Conducted by L. Q. Bradley

Solving the Handicap System

By A. D. MARSTON, *Kansas City Power & Light Co.*

UNDOUBTEDLY many leagues of rifle teams have faced the problem of teams unevenly matched, with two or three teams so outclassed they soon lose interest and drop out. The logical solution in a case like this is a handicap system; but almost every handicap system in common use starts more arguments than it is worth: Jones thinks he ought to have as big a handicap as Smith, and Smith is no better than Brown, and anyway the secretary is crooked; so what's the use? No system is completely satisfactory, but the following plan has been used with great success for the past year under trying conditions, and is adopted from a highly successful bowling scheme:

This year our club faced an extreme situation. Our main object is to furnish as much recreation as possible to as many as possible of the 2,200 employees of our company. Outside competition is a secondary consideration; and indoor shooting is most popular, because it does not take much time, does not require elaborate and expensive equipment and ammunition, and can be enjoyed in the winter.

The answer was a tournament between departments, with each team shooting about once a week. Ten teams enrolled, and here the troubles started. Some teams consisted of experienced shooters, willing and able to practice often, and some consisted of men who never before fired at a target and who had little opportunity for practice. Nobody really likes to compete when hopelessly outclassed. These inexperienced shooters were outclassed, though eventually they would be as good as the best. To hold their interest and to make things more exciting, this scheme was adopted:

Each man's score was kept individually. His individual average was figured as the average of his scores in match shooting. A team is allowed to use any five men from its group in any match. With those men shooting, the average score for that team is obviously the sum of the individual average scores of those men. By adding the individual averages of the men competing, one gets the average performance of each of the two competing teams. The difference between these two team averages is then a measure of their difference in ability.

Our handicap system was to give the team with the lower average two-thirds of the difference in aveerage scores. In this way the lower team could win by shooting way above their average; but their score must be a much better *relative* performance to win.

Here, as in any handicap system, one needs to watch for the poor sport, who shoots just well enough to win, trying to keep his average down. We found it very successful to offer liberal and plentiful prizes for high team scores, for individual high averages, and for individual high scores. The tournament was, of course, decided on a basis of matches won and lost.

As one additional kink, we allowed a team that could get only four men out to use a dummy score of 50 per cent of the possible score. This dummy score was used in figuring both the handicap and the total score. It is low enough to penalize a team without eliminating it completely.

This scheme has been extremely successful. We went through a double round robin, with each team meeting each other team twice, with very few complaints. What few complaints there were came early in the season—everybody seemed satisfied after a fair trial. We don't claim the system is perfect—there are minor troubles to iron out—but we do like the general idea. Any suggestions will be welcome.

MITCHELL AND NESS JOIN N. R. A. STAFF AT WASHINGTON

E. F. ("GENE") MITCHELL, for eleven years with Colt at Hartford, and well known to handgun shooters throughout the country, and especially to police departments, has joined the N. R. A. staff, and will be in charge of a new department having for its purpose the promotion of marksmanship training among police organizations throughout the country.

F. C. Ness, formerly with Belding & Mull at Philipsburg, Pa., and well known as a firearms experimenter and writer, has taken service with the N. R. A., and will assist Colonel Whelen in answering letters for the Dope Bag Department. With the increase in N. R. A. memberships and AMERICAN RIFLEMAN subscriptions, the rifle section of the Dope Bag is growing rapidly.

Mr. Mitchell and Mr. Ness will take up residence in Washington as soon as the necessary personal arrangements can be made.

COMING EVENTS

Michigan State Rifle and Pistol Matches, Camp Custer, Battle Creek, Mich., June 28–29.
Sixth Annual Small-Bore Western States Shoot, Long Beach, Calif., June 20–22, inclusive.
California State Rifle Association Matches, San Luis Obispo, Calif., May 31 and June 1 and 2.
Eastern Small-Bore Tournament, Sea Girt, N. J., July 2–6.
Alabama Rifle Association, Individual Rifle and Pistol Championships, Montgomery, Ala., June 7 and 8.
United Services of New England Tournament, Camp Curtis Guild, Mass., August 6–14.
Oklahoma Rifle Association, State Matches (Rifle and Pistol), Okmulgee, Okla., June 8–9.
Illinois Rifle Association, Dewar Match, Fort Sheridan, Ill., June 15.
Texas Rifle Association, State Matches, Austin, Tex., June 8–15.
New York State Rifle Association Matches, Camp Smith, Peekskill, N. Y., June 8–14, inclusive.
National Rifle and Pistol Matches, Camp Perry, Ohio, August 24 to September 14, inclusive.

HONOR ROLL—100 PER CENT N. R. A. CLUBS

(All club members are individual members of the N. R. A.)

HOOSIER RIFLE CLUB
Mr. Jno. S. Michaelson, Secy.
227 E. Ohio Street
Indianapolis, Ind.

OILFIELD RIFLE CLUB
Mr. Earl Montgomery, Secy.
Ferdig, Mont.

GARY RAILWAYS RIFLE CLUB
Mr. H. J. Buchholz, Secy.
116 W. 45th Avenue
Gary, Ind.

SAN FRANCISCO TRAFFIC RIFLE AND REVOLVER CLUBS
Mr. George Mildahn, Secy.
923 Central Avenue
San Francisco, Calif.

MONTICELLO RIFLE CLUB
Mr. Henry D. Block, Secy.
130 Monticello Avenue
Jersey City, N. J.

RIFLE CLUB OF SUPERIOR
Mr. M. J. Arbuckle, Secy.
Superior, Wyo.

SWISS RIFLE CLUB
Mr. Isidor Ochsner, Secy.
General Delivery
Sumner, Wash.

WOODLAND RIFLE CLUB
Mr. J. S. Tallman, Secy.
Pleasantville, N. Y.

GREENVILLE RIFLE CLUB
Mr. Otelo Ottman, Secy.-Treas.
Greenville, Ohio

PECKVILLE RIFLE ASSOCIATION
Mr. John E. Bridges, Secy.
Rear 341 Maple Street
Peckville, Pa.

LORD DEWAR DIES

IT WAS with deep regret that we learned recently of the death of Thomas Robert, Lord Dewar, on Friday, April 11, at his home in Sussex, England. Lord Dewar is well known to all riflemen as donor of the famous cup bearing his name, and which is the trophy competed for each year by Great Britain and the United States in the celebrated Dewar Match.

Lord Dewar was a keen sportsman, and his tastes were very broad. While he is probably best known to readers of this magazine because of his interest in shooting, in England his name will always be associated with the early pioneer days of motoring, and with horse-racing. Lord Dewar was sixty-six years of age at the time of his death, and was a bachelor, leaving no heir to the title.

OREGON TRAIL MATCH CONDITIONS

(Same conditions as for Schuetzen Match)

Open to—Any member of the N. R. A. and/or members of affiliated rifle clubs residing within 100 miles on either side of the famous Oregon Trail.

Course.—40 shots standing (free-rifle standing position).

Target.—Standard American 200-yard (same as 50-yard Standard American pistol target).

Range.—200 yards.

Rifle.—Any rifle, velocity not over 1,500 f. s., using lead or alloy bullet. Set triggers, palm rest, etc., permitted.

Sights.—Any.

Entries close.—July 1. (Competitors entered in the Schuetzen Match of the N. R. A. Outdoor Program may count their scores in the Oregon Trail Match.)

Scores in Washington.—Not later than August 1.

Entrance fee.—None.

Prizes.—To the winner, a sterling silver medal; second to fifth, bronze medals.

RIFLE RANGE OUTSTANDING FEATURE AT CHICAGO SPORTS SHOW

IN KEEPING with its promotional program of attending important annual sportsmen's shows the N. R. A. was represented at the popular Outdoor America Show held in the spacious exhibition hall, at the Stevens Hotel, Chicago, April 23 to 26, inclusive.

Besides sponsoring an interesting exhibit featuring the development of the present Springfield rifle and showing trophies of international and national significance, the Association conducted a rifle gallery, over which both championship and re-entry matches were fired daily. The range was a Caswell Shooting Gallery equipped with this manufacturer's latest target carriers. A. D. Caswell, proprietor of the Caswell Shooting Gallery Equipment Co., Anoko, Minn., was present to explain to those interested the outstanding features of this up-to-date sliding-target system.

The success of N. R. A. activities at the recent Chicago show was due largely to the enthusiastic co-operation of Illinois shooters, who gave freely of their time and energy in our behalf. We therefore wish to acknowledge with grateful appreciation the interest shown and real assistance extended by our Illinois friends on occasion of the 1930 Outdoor America Show.

N. R. A. OUTDOOR MATCHES SHOW HEALTHY GAINS

THE very popular annual program of N. R. A. Spring-Summer Outdoor Postal Matches got under way on May 1, with healthy increases in practically every event. Like the gallery program, the outdoor schedule is divided into two series. The first series, entries in which closed May 1, covers quite a number of individual rifle and pistol matches, while the second includes both individual and team competitions. Matches of the second series are fired during June, and the entry-closing date is June 1.

Just prior to the opening of the 1930 outdoor season, the Association mailed to all N. R. A. members and club secretaries a 24-page descriptive booklet, "How to Win N. R. A. Medals on Your Own Home Range." The response from the mailing was highly favorable and resulted in acquainting many shooters with the N. R. A. year-'round program of home-range matches. Incidentally, some of these little booklets are still available for distribution. A copy will be mailed to anyone sufficiently interested in the Postal Matches to ask for one.

As explained in a previous issue of the RIFLEMAN, the Association considers its year-'round annual program of Postal Matches an excellent medium for the development of marksmanship ability of all shooters. We honestly believe that participation in these matches will go a long way toward preparing members for the day ahead when they may have the opportunity to compete in important State, Regional, or National Matches fired shoulder-to-shoulder.

For all of these reasons, the N. R. A. has set up a separate organization for conduct of the Postal Matches, so that in the future there should be little, if any, delay in publishing the official bulletins or in the mailing of competition medals.

Official bulletins covering results of all matches fired during June will be issued shortly, following the closing date of the matches, and, if possible, these bulletins will be published in the June issue of the RIFLEMAN.

NAVAL ACADEMY TEAM COPS NATIONAL INTERCOLLEGIATE CHAMPIONSHIP

THE Third Annual Shoulder-to-Shoulder National Competition for the N. R. A. Intercollegiate Team Championship was won by the U. S. Naval Academy Team, Annapolis, Md. The Navy turned in the impressive total of 1,375. The State University of Iowa, 1929 champion, finished second in the national standing with a score of 1,350.

The Annual Intercollegiate Team Championship is determined through the medium of Shoulder-to-Shoulder Sectional Matches held at convenient points throughout the United States. The 1930 Sectional College Matches were fired at the following four regional points: U. S. Naval Academy, Annapolis; State University of Iowa, Iowa City; Drexel Institute, Philadelphia; and 106th Regimental Armory, Brooklyn. Each match was shot over exactly the same course of fire and under identical conditions. An official representative of the N. R. A. was present to observe the firing at each shoot. All targets were subsequently sent to National Headquarters for official scoring, the scores to count both in the sectional championships and in the national standing.

Thirty teams participated in the Sectional Matches. Nine attended the Navy Match, five were present at Philadelphia, and at the Iowa City shoot, as well as at the Brooklyn Match, eight teams put in an attendance. The sectional winners were as follows: U. S. Naval Academy, winner of the match fired at Annapolis, score 1,375; State University of Iowa, winner of the Iowa City Match, score 1,350; Carnegie Institute of Technology, winner of the Philadelphia event, score, 1,316; and Massachusetts Institute of Technology, winner of the Brooklyn shoot, score 1,292.

Since the 1930 College Competitions were the third annual matches for the National Intercollegiate Championship, it is interesting to note a little previous history concerning the match. Because the course of fire and conditions have remained the same over the past three years, it is easy to compare scores, particularly looking to the degree of improvement made by competing teams. The match was won in 1928 by George Washington University, Washington, D. C., with a score of 1,332. At that time this score was considered a very good one considering the fact that for the first time the standing stage was fired strictly off-arm without the aid of the hip rest. Only one other team managed to break the unlucky but envied 1,300 mark. But State University of Iowa came back the following year and won the match with the good score of 1,365, seven additional teams scoring 1,300 or more in the 1929 event. Besides Navy and State University of Iowa, both of which teams scored 1,350 or better in the 1930 National Championship, eleven other college teams turned in scores better than 1,300. This summary of history concerning the annual college event is evidence enough of the rapid improvement being made each year by competing college teams in the direction of improving their already excellent marksmanship.

The course of fire called for 10 shots per man in each of the three positions—prone, kneeling, and standing—and teams were limited to five shooting members, all of whose scores counted for record.

The standing of all teams which participated in the N. R. A. National Intercollegiate Championship follows:

1.	U. S. Naval Academy	1,375
2.	State University of Iowa	1,350
3.	West Virginia University	1,341
4.	University of Maryland	1,333
5.	University of Minnesota	1,328
6.	George Washington University	1,320
7.	Virginia Military Institute	1,319
8.	Carnegie Inst. of Technology	1,316
9.	Kansas Agricultural College	1,309
10.	University of Kansas	1,303
11.	New York University	1,303
12.	University of Nebraska	1,301
13.	Penn State College	1,301
14.	University of Missouri	1,294
15.	Massachusetts Inst. of Technology	1,292
16.	University of Cincinnati	1,291

17. University of Pennsylvania 1,284
18. Washington University of St. Louis 1,281
19. University of Pittsburgh 1,277
20. Boston University 1,259
21. Drexel Institute 1,259
22. University of Wisconsin 1,257
23. Columbia University 1,242
24. Syracuse University 1,235
25. Johns Hopkins University 1,230
26. City College of New York 1,217
27. Brooklyn Poly. (evening school) 1,199
28. Brooklyn Polytechnic Institute 1,166
29. St. John's College 1,161
30. Cooper Union Institute of Tech. 1,024

STOCK EXCHANGE FIRED NEARLY THREE HUNDRED GALLERY MATCHES

MR. G. W. ROBERTSON, manager of the New York Stock Exchange Rifle Team, has just issued a bulletin covering results of the 282 gallery matches in which the Wall Street team participated during the past indoor season.

The bulletin reveals some interesting highlights, the most outstanding of which might be mentioned as the team's successful record and its scope of activities. Of the 282 matches fired the Stock Exchange outfit won 235, ending the season with an impressive average percentage of 83.

OFFICIAL BULLETINS—N. R. A. GALLERY MATCHES

WE PUBLISH below official bulletins of the second series of N. R. A. Individual Gallery Pistol Matches, together with bulletins covering results of all N. R. A. indoor team events.

It will be noted that scores originally reported by Sergt. Joseph Smith, Ontario, N. Y., in the 20-Yard Individual Pistol Matches have been disallowed. Sergeant Smith's scores were protested, and he was requested to shoot the matches over in the presence of an officer designated by his company commander. The scores Smith made in refiring the several matches have been accepted in lieu of the scores he originally sent in. Medals have therefore been awarded in accordance with the corrected bulletins that follow:

[NOTE.—Official Bulletins Nos. 46, 58, 59, and 60, covering results of Junior Team Matches, appear in the Junior Rifle Corps News Section.]

NO. 16 (CORRECTED)—TIMED-FIRE 20-YARD PISTOL MATCH

17 ENTRIES

Conditions.—Open to all, 40 shots timed fire.

Name and address	*Score*
1. Harry S. Menkel, New York City	390
2. R. F. Moore, Columbia, Mo.	383
3. Arlayne Brown, St. Louis, Mo.	378
4. G. A. Hughes, Youngstown, Ohio	378
5. Jim Barlow, Halstead, Kans.	372
6. Arthur Hertzler, Halstead, Kans.	371
7. Wilbur Brunthaver, Fremont, Ohio	370
8. Sergt. Joseph Smith, Fort Ontario, N. Y.	370
9. Philip E. Beach, Rye, N. Y.	357
10. Karl Krautheim, Honolulu, T. H.	364
11. John Elzea, Columbia, Mo.	356
12. Kenneth W. Wright, Chanute, Kans.	355

DISQUALIFIED—CERTIFICATE NOT PROPERLY EXECUTED

13. J. F. Rivers, Riverside, Conn.

NOT REPORTED

14. Howard N. Smith, Oak Park, Ill.
15. Philip Beach, Rye, N. Y.
16. Richard Wilzowski, Fort Bliss, Tex.
17. Milford Baker, Upper Darby, Pa.

NO. 37—RAPID-FIRE PISTOL MATCH, 50 FEET

16 ENTRIES

Conditions.—40 shots rapid fire, fired in 5-shot strings.

Name and address	*Score*
1. Lloyd D. LeMan, White Plains, N. Y.	391
2. G. L. Noland, Columbia, Mo.	386
3. Walter R. Walsh, Union City, N. J.	382
4. C. D. Wild, Janesville, Iowa	376
5. H. B. Taylor, Las Vegas, N. Mex.	374
6. J. W. Elzea, Columbia, Mo.	368
7. Karl Krautheim, Honolulu, T. H.	366
8. O. H. Meyer, Columbia, Mo.	365
9. S. S. Yeaton, Annapolis, Md.	364
10. J. B. Webb, Clearwater, Fla.	354
11. K. W. Wright, Chanute, Kans.	352
12. Lieut. L. J. Raemon, Anniston, Ala.	350
13. C. C. Hullinger, Devils Lake, N. Dak.	346
14. G. A. Hughes, Youngstown, Ohio	343
15. John Kosmalski, Devils Lake, N. Dak.	333
16. J. B. Fischer, Denver, Colo.	275

RAPID-FIRE PISTOL MATCH, 20 YARDS

20 ENTRIES

Conditions.—Same as above.

Name and address	*Score*
1. J. F. Rivers, Riverside, Conn.	388
2. R. F. Moore, Columbia, Mo.	378
3. H. W. Elzea, Columbia, Mo.	377
4. H. B. Taylor, Las Vegas, N. Mex.	375
5. Jim Barlow, Halstead, Kans.	372
6. S. W. Kiracofe, Redondo Beach, Calif.	372
7. C. W. Colston, Rochester, N. Y.	370
8. G. A. Hughes, Youngstown, Ohio	367
9. James F. McCue, San Francisco, Calif.	366
10. O. H. Meyer, Columbia, Mo.	365
11. Milford Baker, Upper Darby, Pa.	363
12. M. D. McVey, San Francisco, Calif.	357
13. W. W. Brunthaver, Fermont, Ohio	354
14. Sergt. Joseph Smith, Fort Ontario, N. Y.	354
15. A. E. Hertzler, Halstead, Kans.	347
16. K. W. Wright, Chanute, Kans.	346
17. B. P. Enright, Perry, Okla.	341
18. Philip E. Beach, Rye, N. Y.	332
19. E. F. Egebrecht, Evanston, Ill.	319

DID NOT SHOOT—TARGETS RETURNED

20. Howard N. Smith, Oak Park, Ill.

NO. 38—.22 SLOW-FIRE PISTOL MATCH, 50 FEET

10 ENTRIES

Conditions.—40 record shots slow fire.

Name and address	*Score*
1. Lieut. L. D. LeMan, White Plains, N. Y.	374
2. Harry S. Menkel, New York City, N. Y.	366
3. A. S. Bjornson, Devils Lake, N. Dak.	354
4. K. W. Wright, Chanute, Kans.	346
5. Homer B. Nelson, Chanute, Kans.	344
6. G. L. Noland, Columbia, Mo.	342
7. W. W. Brotherton, New York City	334
8. W. P. Dunbar, Culver, Ind.	334
9. S. S. Yeaton, Annapolis, Md.	308
10. C. L. Pflieger, Collingswood, N. J.	260

.22 SLOW-FIRE PISTOL MATCH, 20 YARDS

24 ENTRIES

Conditions.—Same as above.

Name and address	*Score*
1. M. D. McVey, San Francisco, Calif.	371
2. William Cook, Washington, D. C.	363
3. Harry S. Menkel, New York City	361
4. Milford Baker, Upper Darby, Pa.	361
5. H. B. Taylor, Las Vegas, N. Mex.	359
6. K. W. Wright, Chanute, Kans.	354
7. E. Manne, St. Louis, Mo.	349
8. Karl Krautheim, Honolulu, T. H.	344
9. W. W. Walter Marr, Washington, D. C.	343
10. A. R. Mumford, Bogota, N. J.	341
11. Allan F. Thomas, Philadelphia, Pa.	335
12. Dr. A. E. Hertzler, Halstead, Kans.	334
13. Jim Barlow, Halstead, Kans.	331
14. G. H. McClellan, Buffalo, N. Y.	317
15. W. M. Christophers, New York, N. Y.	315
16. Sergt. Joseph Smith, Fort Ontario, N. Y.	308
17. E. F. Egebrecht, Evanston, Ill.	299
18. Philip E. Beach, Rye, N. Y.	283
19. B. V. Edworthy, Tulsa, Okla.	257
20. M. Coumider, Tucson, Ariz.	257

NOT REPORTED

21. Stephen Johnson, Wayne, Alberta, Canada.
22. J. F. Rivers, Riverside, Conn.
23. Col. C. E. Stodter, Balboa Heights, C. Z.
24. W. C. Mitchell, Jamestown, N. Y.

NO. 39—FREE-PISTOL MATCH, 50 FEET

5 ENTRIES

Conditions.—60 shots, no time limit.

Name and address	*Score*
1. Harry S. Menkel, New York City	490
2. K. W. Wright, Chanute, Kans.	487
3. A. S. Bjornson, Devils Lake, N. Dak.	469
4. Homer B. Nelson, Chanute, Kans.	450
5. W. W. Brotherton, New York City	441

FREE-PISTOL MATCH, 20 YARDS

15 ENTRIES

Conditions.—Same as above.

Name and address	*Score*
1. J. F. Rivers, Riverside, Conn.	525
2. Harry S. Menkel, New York, N. Y.	513
3. William Cook, Washington, D. C.	511
4. Karl Krautheim, Honolulu, T. H.	505
5. Milford Baker, Upper Darby, Pa.	501
6. E. Mane, St. Louis, Mo.	500
7. J. W. Aitken, Overly, N. Dak.	500
8. S. W. Kiracofe, Redondo Beach, Calif.	491
9. W. Walter Marr, Washington, D. C.	476
10. G. H. McClellan, Buffalo, N. Y.	466
11. W. M. Christophers, New York, N. Y.	461
12. Sergt. Joseph Smith, Fort Ontario, N. Y.	407
13. Edwin W. Goplen, Zumbrota, Minn.	403

NOT REPORTED

14. Joseph H. Strom, Platte, S. Dak.
15. M. Coumider, Tucson, Ariz.

NO. 40—N. R. A. INDIVIDUAL PISTOL CHAMPIONSHIP, 50 FEET

15 ENTRIES

Conditions.—10 shots slow fire, 10 shots timed fire, and 10 shots rapid fire.

Name and address	*Score*
1. Harry S. Menkel, New York City, N. Y.	284
2. G. L. Noland, Columbia, Mo.	280
3. Karl J. Frisch, San Francisco, Calif.	268
4. S. S. Yeaton, Annapolis, Md.	265
5. A. S. Bjornson, Devils Lake, N. Dak.	265
6. Samuel Mitchell, Casper Wyo.	263
7. O. H. Meyer, Columbia, Mo.	260
8. Kenneth W. Wright, Chanute, Kans.	260
9. E. M. Farris, Portsmouth, Ohio	259
10. E. M. Ludlow, Penn Yan, N. Y.	253
11. John B. Fischer, Denver, Colo.	238
12. M. R. Netzloff, Devils Lake, N. Dak.	234
13. W. W. Brotherton, New York, N. Y.	220

NOT REPORTED

14. Isaac W. Turner, White Plains, N. Y.
15. Lieut. L. J. Raemon, Anniston, Ala.

N. R. A. INDIVIDUAL PISTOL CHAMPIONSHIP, 20 YARDS

24 ENTRIES

Conditions.—Same as above.

Name and address	*Score*
1. Harry S. Menkel, New York, N. Y.	287
2. Milford Baker, Upper Darby, Pa.	284
3. Arlayne Brown, St. Louis, Mo.	279
4. Jim Barlow, Halstead, Kans.	278
5. M. D. McVey, San Francisco, Calif.	271
6. Karl Krautheim, Honolulu, T. H.	270
7. William Cook, Washington, D. C.	270
8. James F. McCue, San Francisco, Calif.	267
9. A. E. Hertzler, Halstead, Kans.	266
10. Harry J. Black, Des Moines, Iowa	266
11. C. W. Colston, Rochester, N. Y.	264
12. H. B. Taylor, Las Vegas, N. Mex.	263
13. G. L. Noland, Columbia, Mo.	260
14. Kenneth W. Wright, Chanute, Kans.	260
15. Glenn H. McClellan, Buffalo, N. Y.	257
16. O. H. Meyer, Columbia, Mo.	247
17. Sergt. Joseph Smith, Fort Ontario, N. Y.	246
18. E. M. Ludlow, Penn Yan, N. Y.	242
19. A. R. Mumford, Bogota, N. J.	234
20. B. V. Edworthy, Tulsa, Okla.	226
21. E. F. Egebrecht, Evanston, Ill.	214

NOT REPORTED

22. Capt. G. B. Davidson, Lebanon, Va.
23. J. F. Rivers, Riverside, Conn.
24. Philip E. Beach, Rye, N. N.

NO. 41—INDIVIDUAL .22 PISTOL MILITARY CHAMPIONSHIP

20 ENTRIES

Conditions.—Open to officers and enlisted men in all branches of the Service; military course.

Name and address	*Score*
1. Capt. G. B. Davidson, Lebanon, Va.	290
2. Karl Krautheim, Honolulu, T. H.	288
3. Walter R. Walsh, Union City, N. J.	287
4. Lieut. L. D. LeMan, White Plains, N. Y.	287
5. Lieut. M. J. Reilly, Long Island City, N. Y.	284
6. Sergt. John Carlson, Fort Missoula, Mont.	280
7. Isaac W. Turner, White Plains, N. Y.	266
8. J. B. Webb, Clearwater, Fla.	265
9. S. S. Yeaton, Annapolis, Md.	264
10. Sergt. H. S. Allen, Fort Lincoln, N. Dak.	263
11. Sergt. Joseph Smith, Fort Ontario, N. Y.	258
12. W. W. Brotherton, New York, N. Y.	238
13. D. C. Fabel, Cleveland, Ohio	231
14. E. F. Egebrecht, Evanston, Ill.	224

NOT REPORTED

15. Pfc. A. L. Jordan, Fort Sam Houston, Tex.
16. Sergt. Max W. Link, Fort Sam Houston, Tex.
17. Sergt. Joseph Elo, Fort Sam Houston, Tex.
18. Lieut. A. E. Rothermich, Fort Missoula, Mont.
19. Capt. W. M. Storey, Madison, Wis.
20. Lieut. R. S. Henderson, Fort McClellan, Ala.

NO. 42—INDIVIDUAL POLICE PISTOL CHAMPIONSHIP

8 ENTRIES

Conditions.—10 shots slow fire, 10 shots timed fire, and 10 shots rapid fire.

Name and address	*Score*
1. S. W. Kiracofe, Redondo Beach, Calif.	268
2. Isaac W. Turner, White Plains, N. Y.	250
3. E. F. Egebrecht, Evanston, Ill.	248
4. Glenn H. McClellan, Buffalo, N. Y.	247
5. Howard N. Smith, Oak Park, Ill.	199
6. Philip Bruce, Escanaba, Mich.	197

NOT REPORTED

7. Roscoe Gray, Jackson, Mich.
8. C. D. Wild, Janesville, Iowa.

NO. 43—MILITARY COMPANY TEAM MATCH. DIVISION A

Conditions.—Military course; metallic sights.

FIRST CORPS AREA

Company and location	*Total score*
1. Hdqrs. Co., 2nd Bn. V. N. G., Northfield, Vt.	3,333
2. Co. A, 5th Inf., Fort McKinley, Me.	3,274

3. Co. L, 13th Inf., Fort Ethan Allen, Vt. .. 3,115
4. Co. I, 13th Inf., Fort Ethan Allen, Vt. .. 3,052
5. Troop F, 110th Cav., Boston, Mass. 3,028
6. Co. K, 13th Inf., Fort Ethan Allen, Vt. . 3,000

NOT REPORTED

7. Co. C, 5th Inf., Fort McKinley, Me.
8. Troop B, 122nd Cav., C. N. G., Hartford, Conn.

SECOND CORPS AREA

Company and location	Total score
1. Co. E, 1st Engrs., Fort du Pont, Del. ...	3,162

DID NOT FINISH

2. Co. A, 16th Inf., Fort Jay, N. Y.

NOT REPORTED

3. Co. C, 16th Inf., Fort Jay, N. Y.
4. Co. F, 174th Inf., N. Y. N. G., Buffalo, N. Y.
5. Co. G, 16th Inf., Fort Jay, N. Y.

THIRD CORPS AREA

Company and location	Total score
1. Co. E, 121st Engrs., D. C. N. G., Washington, D. C.	3,353
2. Co. E, 34th Inf., Fort Eustis, Va.	3,255
3. Co. B, 34th Inf., Fort Eustis, Va.	3,231
4. Co. I, 12th Inf., Fort Washington, Md.	3,196
5. Co. A, 12th Inf., Fort Howard, Md.	3,191
6. Co. L, 12th Inf., Fort Washington, Md.	3,102
7. Co. B, 12th Inf., Fort Howard, Md.	3,069

DID NOT FINISH

8. Co. C, 12th Inf., Fort Howard, Md.

NOT REPORTED

9. Co. D, 121st Engrs., D. C. N. G., Washington, D. C.
10. Hdqrs. and Service Co., 121st Engrs., D. C. N. G., Washington, D. C.

FOURTH CORPS AREA

Company and location	Total score
1. Co. G, 22nd Inf., Fort McPherson, Ga.	3,245
2. Co. A, 8th Inf., Fort Screven, Ga.	3,242
3. Co. E, 22nd Inf., Fort McPherson, Ga.	3,237
4. Co. F, 22nd Inf., Fort McPherson, Ga.	3,219
5. Hdqrs. Co., 8th Inf., Fort Moultrie, S. C.	3,207
6. Hdqrs. Co., 22nd Inf., Fort McPherson, Ga.	3,206
7. Co. H, 22nd Inf., Fort McPherson, Ga.	3,139
8. Co. K, 22nd Inf., Fort McClellan, Ala.	3,118
9. Co. G, 8th Inf., Fort Moultrie, S. C.	3,100
10. Co. F, 8th Inf., Fort Moultrie, S. C.	3,007

DISQUALIFIED—CERTIFICATE NOT RETURNED

11. Co. E, 8th Infantry, Fort Moultrie, S. C.

FIFTH CORPS AREA

Company and location	Total score
1. Co. L, 11th Inf., Fort Benjamin Harrison, Ind.	3,239
2. Co. E, 11th Inf., Fort Benjamin Harrison, Ind.	3,222
3. Co. E, 10th Inf., Fort Thomas, Ky.	3,206
4. Co. G, 10th Inf., Fort Thomas, Ky.	3,203
5. Co. C, 11th Inf., Fort Benjamin Harrison, Ind.	3,190
6. Co. K, 11th Inf., Fort Benjamin Harrison, Ind.	3,185
7. Co. A, 11th Inf., Fort Benjamin Harrison, Ind.	3,165
8. Co. G, 11th Inf., Fort Benjamin Harrison, Ind.	3,157
9. Co. F, 10th Inf., Fort Thomas, Ky.	3,124
10. Co. I, 11th Inf., Fort Benjamin Harrison, Ind.	3,110
11. Hdqrs. Co., 10th Inf., Fort Thomas, Ky.	3,075

SIXTH CORPS AREA

Company and location	Total score
1. Co. L, 2nd Inf., Fort Brady, Mich.	3,228
2. Co E, 132nd Inf., I. N. G., Chicago, Ill.	3,202
3. Co. I, 2nd Inf., Fort Brady, Mich.	3,193
4. Co. C, 2nd Infantry, Fort Sheridan, Ill.	3,158

SEVENTH CORPS AREA

Company and location	Total score
1. Co. B, 17th Inf., Fort Crook, Nebr.	3,344
2. Co. C, 17th Inf., Fort Crook, Nebr.	3,293
3. Co. A, 17th Inf., Fort Crook, Nebr.	3,259
4. Co. I, 4th Inf., Fort Lincoln, N. Dak.	3,200
5. Co. L, 4th Inf., Fort Lincoln, N. Dak.	3,167
6. Co. K, 4th Inf., Fort Lincoln, N. Dak.	3,159

DISQUALIFIED—CERTIFICATES NOT RETURNED

7. Co. K, 205th Inf., M. N. G., Morris, Minn.
8. Co. L, 17th Inf., Fort Crook, Nebr.

EIGHTH CORPS AREA

Company and location	Total score
1. Co. A, 9th Inf., Fort Sam Houston, Tex.	3,285
2. Co. B, 1st Inf., Fort F. E. Warren, Wyo.	3,257
3. Co. C, 23rd Inf., Fort Sam Houston, Tex.	3,242
4. Co. C, 9th Inf., Fort Sam Houston, Tex.	3,237
5. Co. I, 9th Inf., Fort Sam Houston, Tex.	3,206
6. Ser. Co., 1st Inf., Fort Francis E. Warren, Wyo.	3,201
7. Co. A, 23rd Inf., Fort Sam Houston, Tex.	3,200
8. Co. K, 1st Inf., Fort F. E. Warren, Wyo.	3,169
9. Co. B, 23rd Inf., Fort Sam Houston, Tex.	3,145

NOT REPORTED

10. Co. K, 1st Inf., Fort F. E. Warren, Wyo.
11. Co. E, 23rd Inf., Fort Sam Houston, Tex.
12. Co. F, 23rd Inf., Fort Sam Houston, Tex.
13. Co. I, 23rd Inf., Fort Sam Houston, Tex.
14. Co. L, 23rd Inf., Fort Sam Houston, Tex.

NINTH CORPS AREA

Company and location	Total score
1. Hdqrs. Co., 7th Inf., Vancouver Bks., Wash.	3,350
2. Co. E, 4th Inf., Fort George Wright, Wash.	3,338
3. Co. I, 7th Inf., Vancouver Bks., Wash.	3,313
4. Co. L, 7th Inf., Vancouver, Bks., Wash.	3,302
5. Co. L, 38th Inf., Fort Douglas, Utah	3,277
6. Co. B, 7th Inf., Vancouver Bks., Wash.	3,275
7. Co. E, 30th Inf., Presidio of San Francisco, Calif.	3,265
8. Co. A, 4th Inf., Fort Missoula, Mont.	3,253
9. Co. F, 45th Inf., Fort George Wright, Wash.	3,241
10. Co. K, 38th Inf., Fort Douglas, Utah	3,238
11. Co. I, 38th Inf., Fort Douglas, Utah	3,233
12. Co. A, 30th Inf., Presidio of San Francisco, Calif.	3,232
13. Co. D, 7th Inf., Vancouver Bks., Wash.	3,226
14. Co. I, 30th Inf., Presidio of San Francisco, Calif.	3,199
15. Co. F, 30th Inf., Presidio of San Francisco, Calif.	3,189
16. Co. C, 4th Inf., Fort Missoula, Mont.	3,181
17. Co. C, 30th Inf., Presidio of San Francisco, Calif.	3,117

DISQUALIFIED—CERTIFICATE NOT PROPERLY EXECUTED

18. Co. L, 30th Inf., Presidio of San Francisco, Calif.

DISQUALIFIED—CERTIFICATE NOT RETURNED

19. Co. H, 185th Inf., C. N. G., Pasadena, Calif.

NO. 44—REGIMENTAL TEAM CHAMPIONSHIP MATCH, DIVISION A

20 ENTRIES

Conditions.—Military course; metallic sights.

SECOND CORPS AREA

Organization and location	Total score
1. 16th Infantry, Fort Jay, N. Y.	3,352

THIRD CORPS AREA

Organization and location	Total score
1. U. S. Naval Academy, Annapolis, Md.	3,375
2. 121st Engrs., D. C. N. G., Wash., D. C.	3,344
3. 34th Infantry, Fort Eustis, Va.	3,286
4. 5th Infantry, M. N. G., Baltimore, Md.	3,175

FOURTH CORPS AREA

Organization and location	Total score
1. 24th Infantry, Fort Benning, Ga.	3,376
2. 29th Infantry, Fort Benning, Ga.	3,367
3. 8th Infantry, Fort Moultrie, S. C.	3,307
4. 22nd Infantry, Fort McPherson, Ga.	3,257

FIFTH CORPS AREA

Organization and location	Total score
1. 10th Infantry, Fort Thomas, Ky.	3,309
2. 11th Infantry, Fort Benjamin Harrison, Ind.	3,285

SEVENTH CORPS AREA

Organization and location	Total score
1. 17th Infantry, Fort Crook, Nebr.	3,349

EIGHTH CORPS AREA

Organization and location	Total score
1. 9th Infantry, Fort Sam Houston, Tex.	3,318
2. 20th Infantry, Fort F. E. Warren, Wyo.	3,306
3. 25th Infantry, Nogales, Ariz.	3,257

NINTH CORPS AREA

Organization and location	Total score
1. 7th Infantry, Vancouver Bks, Wash.	3,395
2. 4th Infantry, Fort George Wright, Wash.	3,355
3. 38th Infantry, Fort Douglas, Utah	3,343
4. 30th Infantry, San Francisco, Calif.	3,327

DISQUALIFIED—CERTIFICATE NOT RETURNED

5. 185th Infantry, C. N. G., Pasadena, Calif.

NO. 45—FRESHMAN TEAM MATCH

5 ENTRIES

Conditions.—20 shots per man in each of three positions—prone, kneeling, and standing.

College and location	Total score
1. U. S. Naval Academy, Annapolis, Md.	2,675
2. State Univ. of Iowa, Iowa City, Iowa	2,596
3. Texas Tech. College, Lubbock, Tex.	2,495
4. Mass. Inst. of Technology, Cambridge, Mass.	2,491
5. Cleve. School of Tech., Cleveland, Ohio	2,229

NO. 47—AMERICAN LEGION TEAM CHAMPIONSHIP MATCH

8 ENTRIES

Conditions.—Open to Legionaires only. Three stages as follows: 10 shots prone, 10 sitting; 10 shots prone, 10 kneeling; 10 shots prone, 10 standing (free rifle standing position) 50 feet, any sights; to the winning team, 5 silver medals; bronze medals to the second and third teams.

Organization and location	Total score
1. Smith-Reynolds Post A. L., Vancouver, Wash.	2,882
2. Spencer Kelly Post N. Y. A. L., Tarrytown, N. Y.	2,800
3. Baldwin Patterson Post A. L., Des Moines, Iowa	2,797
4. Castle Williams Post A. L., Decatur, Ill.	2,718
5. Kenosha Legion Post, Kenosha, Wis.	2,625
6. Md. Guard Memorial Post A. L., Baltimore, Md.	2,517
7. Mahoning A. L., Youngstown, Ohio	2,464
8. North Shore Post, Chicago, Ill.	2,262

NO. 48—MILITARY COMPANY .22 PISTOL TEAM MATCH

8 ENTRIES

Conditions.—10 shots slow fire, 10 shots timed fire, 10 shots rapid fire, per man.

Organization and location	Total score
1. Co. A, 4th Inf., Fort Missoula, Mont.	1,286
2. Hdqrs. Co., 7th Inf., Vancouver Brks., Wash.	1,282
3. Co. M, 4th Inf., Fort Lincoln, N. Dak.	1,260
4. Co. B, 17th Inf., Fort Crook, Nebr.	1,258
5. Co. D, 4th Inf., Fort Missoula, Mont.	1,213
6. Co. M, 38th Inf., Fort Douglas, Utah	1,116
7. Co. D, 23rd Inf., Fort Sam Houston, Tex.	1,109
8. Co. I, 9th Inf., Fort Sam Houston, Tex.	836

NO. 49—PISTOL TEAM CHAMPIONSHIP, 20 YARDS

5 ENTRIES

Conditions.—10 shots slow fire, 10 shots timed fire, 10 shots rapid fire, per man.

Organization and location	Total score
1. Troop I, Post 665 A. L., Buffalo, N. Y.	1,382
2. University of Mo., Columbia, Mo.	1,373
3. Olympic Pistol and Rifle Club, San Francisco, Calif.	1,341
4. Toledo Rifle and Pistol Club, Toledo, Ohio	1,330
5. Brooklyn Rifle and Revolver Club, Brooklyn, N. Y.	1,297

NO. 50—WOMEN'S TEAM MATCH

Conditions.—Two strings each of 2 sighting shots and 10 shots for record fired in the prone position; 5 high scores each stage count for record.

Club and location	Total score
1. George Washington University, Washington, D. C.	2,954
2. Carnegie Inst. of Technology, Pittsburgh, Pa.	2,931
3. University of Washington, Seattle, Wash.	2,927
4. University of Missouri, Columbia, Mo.	2,898

NO. 51—TYRO TEAM MATCH, 50 FEET

24 ENTRIES

Coditions.—30 shots prone, each man.

Club and location	Total score
1. Roslyn Rifle Club, Roslyn, N. Y.	1,492
2. Univ. of Missouri, Columbia, Mo.	1,482
3. Lake Region Rifle Club, Devils Lake, N. Dak.	1,481
4. Sterling Rifle Club, Sterling, Colo.	1,480
5. American Legion Rifle Club, Arkansas City, Kans.	1,478
6. Stuyvesant Rifle Club, Stuyvesant, N. Y.	1,474
7. Norwich Univ. Rifle Club, Northfield, Vt.	1,473
8. New Britain Rifle Club, New Britain, Conn.	1,471
9. Rippowam Rifle and Gun Club, Stamford, Conn.	1,469
10. Quinnipiac Rifle and Revolver Club, New Haven, Conn.	1,468
11. Pelican Rifle Club, Klamath Falls, Oreg.	1,466
12. Des Moines Post Office R. C., Des Moines, Iowa	1,482
13. Lufbery Rifle Club (Team No. 2), Wallingford, Conn.	1,461
14. Lufbery Rifle Club (Team No. 1), Wallingford, Conn.	1,461
15. M. I. T. Freshman, Cambridge, Mass.	1,455
16. Jerome Rifle Club, Jerome, Idaho	1,451
17. Silver City Gun Club, Meriden, Conn.	1,450
18. Ridge Community Rifle Club, Chicago, Ill.	1,447
19. Basic Rifle Club, Freehold, N. Y.	1,442
20. Duke City Rifle Assn., Albuquerque, N. Mex.	1,439
21. Morris Rifle Club, Morris, Minn.	1,437
22. South Bend Rifle Club, South Bend, Ind.	1,413
23. Stuart Rifle Club, Stuart, Iowa	1,412
24. Decatur Rifle and Pistol Club, Decatur, Ill.	1,389

NO. 52—TYRO TEAM MATCH, 75 FEET

15 ENTRIES

Conditions.—30 shots prone, each man.

Club and location	*Total score*
1. Hawthorne Gun Club (Men), Chicago, Ill.	1,474
2. Turlock Civilian Rifle Team, Turlock, Calif.	1,474
3. Jerome Rifle Club, Jerome, Idaho	1,465
4. Spang-Chalfant Rifle Club, Etna, Pa.	1,458
5. Union City Rifle Club, Union City, N. J.	1,456
6. Pittsfield Works G. E. A. A. R. C., Pittsfield, Mass.	1,454
7. Marin Rifle Club, San Anselmo, Calif.	1,447
8. Prison City Rifle Club, Auburn, N. Y.	1,445
9. Mount Vernon Rifle and Revolver Club, Mount Vernon, N. Y.	1,441
10. Hornell Rifle Club, Hornell, N. Y.	1,438
11. W. E. Kearny Rifle Club, Kearny, N. J.	1,438
12. Mahoning Rifle Club, Youngstown, Ohio	1,425
13. Hawthorne Gun Club (Women), Chicago, Ill.	1,419
14. Bristol Train of Artillery R. C., Bristol, R. I.	1,415
15. Eastern Ohio Rifle Club, Columbiana, Ohio	1,406

NO. 53—CIVILIAN INTERCLUB (ANY SIGHTS), 50 FEET

13 ENTRIES

Conditions.—Three stages: 10 shots prone, 10 sitting; 10 shots prone, 10 kneeling; 10 shots prone, 10 standing; per man.

Club and location	*Total score*
1. Business Men's Rifle Club, Columbus, Ohio	2,915
2. Miami Rifle Club, Cincinnati, Ohio	2,903
3. Deerfield Gun Club, Kings Mills, Ohio	2,892
4. Toledo Rifle and Pistol Club, Toledo, Ohio	2,891
5. N. & W. Ry. Y. M. C. A. Rifle Club, Portsmouth, Ohio	2,889
6. Ames Faculty Rifle Club, Ames, Iowa	2,889
7. Dayton Rifle and Revolver Club, Dayton, Ohio	2,881
8. Ontario Rifle Club, Ontario, Calif.	2,876
9. Mansfield Rifle Club, Mansfield, Ohio	2,864
10. Vancouver (Wash.) Rifle Club, Vancouver, Wash.	2,847
11. Rochester Rifle Club, Rochester, N. Y.	2,747
12. Ruidoso Valley Rifle Club, Ruidoso, N. Mex.	2,376

NOT REPORTED

13. Morris Rifle Club, Morris, Minn.

NO. 54—CIVILIAN INTERCLUB (ANY SIGHTS), 75 FEET

17 ENTRIES

Conditions.—Three stages: 10 shots prone, 10 sitting; 10 shots prone, 10 kneeling; 10 shots prone, 10 standing; per man.

Club and location	*Total score*
1. Hawthorne Gun Club, Chicago, Ill.	2,908
2. Quinnipiac Rifle and Revolver Club, New Haven, Conn.	2,897
3. Perth Amboy Rifle Club, Perth Amboy, N. J.	2,892
4. Portland Rifle Club, Portland, Oreg.	2,891
5. Brattleboro Rifle Club (Team No. 1), Brattleboro, Vt.	2,886
6. Bell Rod and Gun Club, Chicago, Ill.	2,869
7. W. E. Kearny Rifle Club, Kearny, N. J.	2,857
8. Jamestown Rifle Club, Jamestown, N. Y.	2,846
9. Lakewood Rifle and Pistol Club, Lakewood, Ohio	2,816
10. Brooklyn Rifle and Revolver Club, Brooklyn, N. Y.	2,810
11. Minneapolis Rifle Club, Minneapolis, Minn.	2,805
12. Louisville Rifle and Revolver Club, Louisville, Ky.	2,791
13. Brattleboro Rifle Club (Team No. 2), Brattleboro, Vt.	2,779
14. Claremont Rifle Club, Claremont, N. H.	2,758

DID NOT FINISH

15. East Orange Rifle Club (Team No. 1), East Orange, N. J.

NOT REPORTED

16. East Orange Rifle Club (Team No. 2), East range, N. J.
17. Orymca Rifle Club, East Orange, N. J.

NO. 55—CIVILIAN INTERCLUB (METALLIC SIGHTS), 50 FEET

29 ENTRIES

Conditions.—Three stages: 10 shots prone, 10 sitting; 10 shots prone, 10 kneeling; 10 shots prone, 10 standing; per man.

Organization and location	*Total score*
1. New York Stock Exchange R. C., New York, N. Y.	2,874
2. Nemadji R. C., Superior, Wis.	2,864
3. Manchester Post R. C., Manchester, Iowa	2,862
4. Livermore R. C., Livermore, Colo.	2,843
5. Toledo Rifle and Pistol Club, Toledo, Ohio	2,838
6. Lake Region R. C., Devils Lake, N. Dak.	2,838
7. Quinnipiac R. and R. Club, New Haven, Conn.	2,837
8. Thief River R. C., Thief River Falls, Minn.	2,823
9. Fort Wayne R. and R. Club, Fort Wayne, Ind.	2,813
10. P. R. R. Logansport Division R. C., Logansport, Ind.	2,797
11. Cleveland High School Alumnæ R. C., Cleveland, Ohio	2,778
12. Shelby Rifle and Pistol Club, Shelbyville, Ind.	2,774
13. Muncie Rifle and Pistol Club, Muncie, Ind.	2,768
14. Tippecanoe Rifle Association, La Fayette, Ind.	2,763
15. Ladysmith R. C., Ladysmith, Wis.	2,747
16. Lufbery Rifle Club, Wallingford, Conn.	2,736
17. Aitken Rifle Club, Aitken, Minn.	2,697
18. Basic Rifle Club, Freehold, N. Y.	2,677
19. Lodi Rifle Club, Lodi, Wis.	2,652
20. Gary Railways Rifle Club, Gary, Ind.	2,641
21. Rushville Rifle Club, Rushville, Ind.	2,616
22. Warwick Rifle Club, Warwick, N. Dak.	2,608
23. Springdale Rifle Club, Riley, Wis.	2,603
24. Buxton Rifle Club, Buxton, N. Dak.	2,578
25. Ruidoso Valley R. C., Ruidoso, N. Mex.	2,327

ENTRY WITHDRAWN

26. Silver City Gun Club, Meriden, Conn.

NOT REPORTED

27. Alta Dist. Rifle Club, Dinuba, Calif.
28. Fairport Rifle Club, Perry, Ohio.
29. Northwood Rifle Club, Northwood, N. Dak.

NO. 56—CIVILIAN INTERCLUB (METALLIC SIGHTS), 75 FEET

6 ENTRIES

Conditions.—Three stages: 10 shots prone, 10 sitting; 10 shots prone, 10 kneeling; 10 shots prone, 10 standing; per man.

Club and location	*Total score*
1. Roberts Island Rifle Club, Stockton, Calif.	2,871
2. Turlock Civilian Rifle Club, Turlock, Calif.	2,848
3. Spang-Chalfant Rifle Club, Etna, Pa.	2,774
4. Victory Rifle Club, Butler, Pa.	2,772
5. N. Y. C. R. R. Athletic Association R. C., Cleveland, Ohio	2,406

NOT REPORTED

6. Alta Dist. Rifle Club, Dinuba, Calif.

NO. 57—POLICE PISTOL TEAM CHAMPIONSHIP

Conditions.—Two scores of 5 shots each, slow fire, one minute per shot; two scores of 5 shots each, timed fire, 20 seconds per shot; two scores of 5 shots each, rapid fire, 10 seconds per score, 5 shots on each of two targets.

Team and location	*Total score*
1. Buffalo Police Team No. 2, Buffalo, N. Y.	1,279
2. Buffalo Police Team No. 1, Buffalo, N. Y.	1,276

NO. 61—NATIONAL INDIVIDUAL MILITARY CHAMPIONSHIP, DIVISION B

Conditions.—Military course; metallic sights.

Name and address	*Score*
1. 1st Lieut. Morton Solomon, White Plains, N. Y.	692
2. Sergt. Ernest E. Sellers, Birmingham, Ala.	691
3. Sergt. Axel G. Sidenblad, Morris, Minn.	688
4. Midshipman D. S. McDougal, Annapolis, Md.	685
5. Sergt. Adolph F. Sarman, Fort F. E. Warren, Wyo.	680
6. Sergt. John C. Carlson, Fort Missoula, Mont.	664
7. Capt. Floyd D. Gibson, Chicago, Ill.	661
8. Capt. D. C. Fabel, Cleveland, Ohio	595

NOT REPORTED

9. Sheldon Viles, Northfield, Vt.

MEMBERSHIP OF NEW NATIONAL BOARD ANNOUNCED

THE War Department has announced that the following comprise the New National Board for Promotion of Rifle Practice. All of the gentlemen named have long been associated with the shooting game and are friendly toward the promotion of civilian rifle practice:

Assistant Secretary of War Frederick H. Payne.

Assistant Secretary of the Navy Ernest Lee Jahnke.

Maj. Gen. Fred C. Ainsworth, U. S. Army, retired.

Maj. Gen. Robert H. Allen, U. S. Army, retired.

Maj. Gen. Stephen O. Fuqua, Chief of Infantry.

Maj. Gen. W. G. Everson, Chief of Militia Bureau.

Rear Admiral Luke McNamee, U. S. Navy.

Brig. Gen. Bird W. Spencer, New Jersey National Guard.

Brig. Gen. Winfield S. Price, New Jersey National Guard.

Brig. Gen. Milton A. Reckord, Maryland National Guard.

Brig. Gen. George C. Shaw, U. S. Army, retired.

Col. Hu B. Myers, Cavalry, D. O. L.

Col. Edward Croft, Infantry, General Staff.

Lieut. Col. J. M. Coward, U. S. Army, retired (Executive Officer).

Lieut. Col. L. M. Rumsey, Infantry Reserve.

Lieut. Col. Fred M. Waterbury, New York National Guard.

Commander R. R. Waesche, U. S. Coast Guard.

Maj. Benjamin N. Booth, C. A. C., General Staff.

Maj. Samuel M. Harrington, U. S. Marine Corps.

Maj. Francis W. Parker, Jr., Ordnance Reserve.

Maj. K. K. V. Casey.

A meeting of the Board has been called for May 14, at which dates as well as rules and regulations for the 1930 National Matches will be approved. Full report of the meeting will appear in the July RIFLEMAN.

INDOOR RIFLE AND PISTOL MATCHES, INDIANA NATIONAL GUARD AND INDIANA STATE RIFLE ASSOCIATION

(Held at the Culver Military Academy, April 5, 1930.)

RIFLE MATCHES

INDIVIDUAL CHAMPIONSHIP MATCH

Conditions.—50 feet, prone position; 20 shots for record.

Prizes.—Gold, silver, and bronze medals and merchandise.

Name and address	*Score*
1. Edward V. Menefee, Rising Sun (22 bulls over)	200
2. Ervin M. Kaiser, Fort Wayne (2 bulls over)	200
3. Albert Smith, Zionsville	199
4. W. P. Woodruff, La Fayette	199
5. Thornwell Jacobs, Culver	199
6. William C. Barnes, Culver	199
7. Corban J. Rushton, Danville	199
8. R. S. Brown, Logansport	198
9. Lon J. Manlief, Indianapolis	198
10. Robert J. Scott, Culver	198

INDIVIDUAL CHAMPIONSHIP MATCH

Conditions.—50 feet, offhand; 20 shots for record.

Prizes.—Gold, silver, and bronze medals, and merchandise.

Name and address	*Score*
1. Edward V. Menefee, Rising Sun	176
2. Orville Miller, Fort Wayne	176
3. Milo D. Snyder, Cromwell	175
4. P. H. Makielski, Mishawaka	175
5. David N. McBrier, Culver	175
6. Wiley C. Dorsett, Danville	171
7. R. S. Brown, Logansport	170
8. Thornwell Jacobs, Culver	168
9. Othel E. Crockett, Logansport	165
10. Willard P. Dunbar, Culver	165

TEAM MATCH

Conditions.—50 feet, prone position. Teams of five, all scores to count; 20 shots for record, fired by each member of the team.

Prizes.—The Military trophy to the highest team representing the Indiana National Guard; the Indiana State Rifle Association trophy to the highest team representing the civilian clubs; gold, silver, and bronze medals will be awarded for first, second, and third place in each class.

INDIVIDUAL CHAMPIONSHIP PISTOL MATCH

Conditions.—.22-caliber, 50 feet. Ten shots for record.

Prizes.—Gold, silver, and bronze medals and merchandise.

INDIVIDUAL PISTOL MATCH—25 YARDS

Arm.—The service pistol or service revolver, caliber .45.
Course.—Ten shots for record, slow fire.
Target.—L.
Prizes.—Gold, silver, and bronze medals and merchandise.

Name and address	*Score*
1. Erwin M. Kaiser, Fort Wayne	100
2. Ralph W. Noland, Fort Wayne	100
3. Rogelio J. H. Madero, Culver	98
4. John A. Ross, Culver	98
5. John F. Hauck, Fort Wayne	98
6. Byron Wiess, Jr., Culver	98
7. George W. Martin, Lake Placid, N. Y.	97
8. George Mowrey, Warsaw	97
9. R. A. Miller, Indianapolis	97
10. Glen Harmon, Warsaw	97

PISTOL TEAM MATCH

Conditions.—.22-caliber, 50 feet. Teams of five, all scores to count; 10 shots for record fired by each member of the team.
Prizes.—Gold, silver, and bronze medals.

Name and address	*Score*
1. Kosciusko Rifle Club, Warsaw	422
2. Culver Military Academy	412
3. Co. K, 152nd Inf., Fort Wayne	403

INDIVIDUAL STATE GALLERY CHAMPIONSHIP—AN AGGREGATE

Conditions.—Total of scores made in ind. rifle prone, ind. rifle offhand, ind. pistol.
Prizes.—Gold medal and merchandise.

Name and address				*Score*
1. Milo D. Snyder, Cromwell	194	175	85	454
2. Edward V. Menefee, Rising Sun	200	176	73	449
3. Dr. P. H. Makielski, Mishawaka	197	175	74	446
4. Willard P. Dunbar, Culver	197	163	82	442
5. Harry M. Turpin, New Castle	192	161	88	441
6. Corban J. Rushton, Danville	199	163	74	436
7. R. S. Brown, Twelve Mile	198	170	67	435
8. Othel E. Crockett, Logansport	195	163	73	431
9. Fred W. Jay, Gary	178	155	91	424
10. James Butterworth, Highland Park, Ill.	194	145	60	399
11. Donald Atherton, Evanston, Ill.	190	110	..	300

JUNE NOVELTY FEATURE IN TROPHY MATCH

MARE ISLAND RIFLE CLUB (California), a new entry in the American Rifleman Trophy Match, is tied with Camp Fire Rifle Club, of New York, for the lead in the 1930 Rifleman Trophy Competition. Each club has a score of 170 points. The California organization did not enter the competition until April, but lost no time in forging right to the front.

Much credit is also due the Centennial Junior Rifle Club, of Chicago, which club has stepped into second place. As the name indicates, this is a junior outfit and it has certainly piled up a very unusual score for a group of young shooters. Junior clubs as a rule do not have such a wide field from which to draw; hence the record Centennial has made is particularly impressive.

Interest in the Rifleman Trophy Competition continues at a high mark as evidenced by the good scores already registered this year. Four clubs now have a score of over 100 points, while at this time last year only the leading club had reached this mark with 110 points. These four clubs are now assured of receiving consolation prizes, while each has a splendid chance to cop one of the handsome trophies awarded by THE AMERICAN RIFLEMAN to the winner and runner-up teams.

The following announcement will be of special interest to every contestant:

SPECIAL JUNE INNOVATION

A new feature is going to be inaugurated this month. During the month of June, 1930, *only*, double credit (6 points) will be given for each new annual membership received in the office and full credit (3 points) will be awarded for each membership renewal received during this period.

Here is a splendid opportunity to run up to that 100-point mark. It is likewise a very appropriate time to make your club a 100 per cent N. R. A. club, thus saving the $10 annual club dues.

To those clubs not yet entered, it is not too late to get into the swing of things. The runner-up winner in the 1929 American Rifleman Trophy Match, the Morris (Minnesota) Rifle Club, did not enter the competition last year until May. When the June Match report went to press Morris had only 5 points to its credit. Due to this unusual offer June is an excellent month for your start.

Don't forget how a life membership affects a score, and tell your club members that if they will send in their life memberships any time before the expiration of their present annual memberships they need remit only $22.

Kindly list all new memberships, renewals, match enteries, club member subscriptions, etc., on the special score sheets provided for that purpose, so that there will be no discrepancy in the crediting of points. This is something worth remembering because we can not be responsible for points not recorded on the special blanks. Such score sheets, and application blanks, together with descriptive literature and price lists, will be cheerfully furnished upon request.

Standing of the fifteen highest clubs to date follows:

1. Camp Fire Rifle Club, New York, N. Y.	170
1. Mare Island Rifle Club, Mare Island, Calif.	170
2. Centennial Junior Rifle Club, Chicago, Ill.	137
3. Shawano Rifle Club, Shawano, Wis.	102
4. Hoosier Rifle Club, Indianapolis, Ind.	99
5. Oilfield Rifle Club, Kevin, Mont.	93
6. Gary Railways Rifle Club, Gary, Ind.	86
7. South Bend Tribune Rifle Club, Inc., South Bend, Ind.	86
8. Tacoma National Rifle and Revolver Club, Tacoma, Wash.	84
9. Victory Rifle Club, Butler, Pa.	76½
10. Swiss Rifle Club, Sumner, Wash.	60
11. Lake Region Rifle Club, Devils Lake, N. Dak.	50
12. Sioux Valley Rifle Club, Akron, Ohio	48
13. Burbank Rifle and Revolver Club, Burbank, Calif.	47½
14. W. E. Kearny Rifle Club, Kearny, N. J.	47

THREE STATES REPRESENTED IN ALABAMA SHOOT

THE Bessemer, Ala., Civilian Rifle Team won the recent Intrastate Rifle Matches held on the National Guard range, near Montgomery. The contest was one of the keenest and most interesting held since the World War, and was participated in by marksmen from Alabama, Georgia, and Mississippi.

This match was held under the sanction, rules, and regulations of the National Rifle Association. Competing teams in the matches, and their scores, follow:

Winning teams: Total score 683, possible 750. Bessemer Civilian Rifle Team, composed of R. E. Strickland, H. O. Clapp, C. M. Holliday.

Second team: Company L 167th Infantry: Total score 669. Team composed of Capt. W. J. Hanna, Sergt. J. F. Hankins, and Sergt. E. E. Sellers.

Third team: Atlanta Rifle Club; total score 647. Team composed of Capt. C. D. Rogers, H. N. Dunwoody, and J. S. McDonald.

Fourth team: Atlanta Civilian Rifle Team; total score 646. Team composed of Tom O'Neill, C. G. Hamby, H. C. Wells.

INTRASTATE INDIVIDUAL RIFLE MATCH

Regulation positions, range 200 and 300 yards. Out of a possible 250 the following scores were made:

Capt. W. J. Hanna, Alabama, 231; H. A. Clapp, Alabama, 230; C. M. Holliday, Alabama, 229; Sergt. J. F. Hankins, Alabama, 228; R. E. Strickland, Alabama, 224; J. S. McDonald, Georgia, 223; H. C. Wells, Georgia, 221.

ATTENTION ILLINOIS RIFLEMEN!

By W. M. GARLINGTON

ON JUNE 15 the new small-bore layout at Fort Sheridan will be officially dedicated and the Illinois State Rifle Association's annual Dewar will be held to celebrate the event.

The new layout leaves little to be desired from the standpoint of facilities available to the small-bore rifleman. In place of the patch-of-ground-in-the-woods, with its concrete-hard firing points familiar to those using the range last year, there now exists a modern range providing for firing at 50, 100, and 200 yards.

The range has been scraped and leveled, the firing points reconstructed and everything tidied up. The firing points and butts have been sodded with fine old sod, so as to provide both comfort and cleanliness for the shooter, while grass seed has been planted elsewhere on the range.

There has been built a pit house for storing target frames, etc., a latrine, and a shelter house. The latter, located near the 50- and 100-yard firing point, provides a most welcome addition to the layout. In case of rainstorms shooters now have at their disposal convenient and adequate shelter.

Firing points have been equipped with numbered position posts, while all frames carry number boards to correspond with the position posts; hence no shooter need worry about the number of his target, no matter what range he is firing from.

The equipment has been completed by constructing special frames for 50- and 100-yard targets.

The above improvements are the result of the untiring efforts of a small coterie of riflemen in raising funds amongst the shooters, plus the whole-hearted co-operation of Gen. C. H. Conrad, Jr., the Commanding General at Fort Sheridan. It goes without saying that the efforts of these men should be rewarded by an increase in the number of competitors entering the matches.

Due to the national importance of the Dewar, it is only fitting that the dedication match should be over this course. The prize and medal awards are exceptionally attrac-

tive, and there is every reason why the number of shooters competing this year should break all records for this section.

Three silver sandwich trays, presented by Messrs. W. M. Garlington, A. R. Eppstein, and Russell Wiles, Sr., will go to the winner of the match, and the high men in B and C classes, respectively. The classification will be in accordance with the Lewis class system used in trap shooting. A silver and three bronze medals will go to those finishing in second, third, and fourth places and high tyro. Thus both wolves and lambs will have plenty to scrap over.

All shooters in Chicagoland are urged to enter, especially the new and younger shooters. You .30-caliber addicts, leave the big gun at home and come demonstrate your skill at dead-center holding!

June 15 is the date—10:30 a. m. central standard time the hour. Entry fee $1.50; nonmembers of the State Association $2. Entries close at 10 a. m. Those made afterward will carry a penalty of $1 additional. All entries will be squadded. Everybody come, and make your entries early.

NEW ENGLAND PISTOL-SHOOTERS—LOOK!

A LARGE crowd of handgun enthusiasts are expected to attend the Pistol Matches of the Connecticut State Rifle Association which will be held Sunday, June 22, 1930, on the range of the Hartford Gun Club at Knotts' Corners, about 9 miles west of Hartford, on the Farmington Road.

There will be matches for civilians, police, and military men, over the National Pistol course, a Slow-Fire Match and Free-Pistol Match, all shooting being done at 25 and 50 yards.

FORT WORTH SHOOTERS GOING STRONG

THE Second Annual Match between the Fort Worth Rifle and Pistol Club and the Trinity Rifle Club, of Dallas, for the Individual Inter-City Championship, small-bore rifle, over Dewar course, iron sights, was held April 13 in Dallas, on their new range. A. L. Knight, of Fort Worth, was the winner last year, and T. Randle, also of Fort Worth, won it this year. There were 32 entries. Following are the high scores:

T. Randle	393
L. C. Turner	392
S. B. Thomas	391
N. W. Smith	388
R. P. Patterson	387
V. A. Moore (Dallas)	386
J. M. Harris (Dallas)	385
R. T. Dorsey	385
C. E. Watson (Dallas)	385
A. L. Knight	385
M. A. Greathouse	383

It was interesting to note that Fort Worth took the high 5, and all except three places in the high 11.

On Sunday, April 27, the Dallas Club will come over here and shoot the Inter-City Small-Bore Team Championship, counting the high 5 in each club. The match will be held at Shady Grove Camp on Lake Worth. Fort Worth won the first match last year. In both of these matches, handsome silver cups about 2 feet high, valued around $100 each, are the awards.

Our pistol team shot a match with Paffes' outfit at St. Augustine last week, counting high 5 in each club, any pistol or revolver, making 469 x 500 against their 439. In this the police target was used, with which they are not familiar, and they threw a couple of misses, which resulted in the low score. A return match with them was held the week ending May 10; identical conditions except a 25-yard standard American target was used.

Everybody is practicing up for the Southwestern matches, which will be held in Dallas May 24 and 25, using small-bore and pistol. At the rate our boys are going, we expect to see some high scores over there. Members of our club took the majority of prizes there last year. Naturally, we hope to repeat this year.

CHALLENGES

M. M. BARNES and H. CREVISTON of West Lafayette, Ind., challenge any two-man Krag teams for 200-yard postal matches. Any position, any ammunition, iron sights only; target, Army A. Address H. Creviston, 175 Littleton St., West Lafayette, Ind.

THE BELLE CITY RIFLE CLUB of Racine, Wis., have never before entered competition. They are now desirous of shooting matches with any teams using either .22 caliber or the .30-06. Address Louis F. Buhler, Jr., Secy.-Treas., Belle City Rifle Club, Cooper Station, Racine, Wis.

THE STANTON PISTOL AND RIFLE CLUB, B. S. Bailey, Secy.-Treas., P. O. Box 381, Pittston, Pa., would like to hear from clubs desirous of shooting outdoor postal matches.

A MESSAGE FOR PENNSYLVANIA SHOOTERS

SHOOTERS of Pennsylvania, both high-power and small-bore, who possibly can go to Camp Perry or who wish to try out for the Pennsylvania Civilian Rifle Team, are requested to communicate at their earliest convenience with Wilbur L. Wilson, 615 Brown's Ave., Erie, Pa.

PAFFE WILL AGAIN HEAD RAILWAYMEN'S TEAM

IT IS with a great deal of pleasure that we announce the appointment of F. J. Paffe, St. Augustine, Fla., as Captain of the 1930 International Railwaymen's Small-Bore Team.

Mr. Paffe will be remembered as captain of the successful 1929 U. S. Railwaymen's Team as well as the record holder of the highest individual score ever recorded in either the Dewar or International Railwaymen's Match. His proven ability both as a team captain and shooter makes Paffe admirably qualified to again lead the American railway riflemen in their attempt to retain possession of the handsome Pennsylvania Railway trophy.

The American Railway Team will fire at Camp Perry on Saturday, September 6, while British Railwaymen will shoot at Derby on Sunday, September 21.

THE BRITISH ARE "COMING"

By E. M. FARRIS

C. S. LANDIS is one American that has been telling secrets to our English brethren, secrets that sometimes intimated that our riflemen took more variety in their shooting than they, the English, did and found it was not a bad thing for us. He hit them for a four-bagger when he spoke of the use of scopes for sighting. If they paid him for those articles it was money well spent.

Those articles appeared in *The Rifleman*, the small-bore publication for English small-bore fans. The writer is a recipient of a copy of each issue of that magazine and takes great interest in reading the many fine articles appearing therein. One shooter of the .22 from the south of England wrote me, not long ago, that he doubted there was a small-bore rifle in the whole island fitted with a telescope sight. But, "it won't be long now."

The March issue of *The Rifleman* has just reached me, and I warm up right smartly to a full-page advertisement by the S. M. R. C. (Society of Miniature Rifle Clubs) wherein they show a Vickers and a B. S. A. mounted with a full-fledged Fecker! The scope is called S. M. R. C. No. 8; but we know it were it called a Thingamajig. It looks good. It indicates that the great English-speaking nations are coming closer together in the matter of our shooting methods and equipment. Whereas we have used scoring methods and the Dewar course to go along with their ideas, now it seems our offerings and experiences are to be tried out over there.

There has been an effort in recent months to interest some of the railway teams of England to take up the four-position game for gallery shooting. Nothing has yet been accomplished, judging from such reports as have come to us; but we venture the prognostication that this coming gallery season will find matches booked wherein all the positions will be featured.

One Englishman has written that his brethren "had to be shown," and that they would not play a new game until it was demonstrated and had proved it would be beneficial to those who like their tried-and-true hobbies. But it would seem that they have shown a splendid spirit in making it possible for their miniature riflemen to get such fine equipment as the aforementioned scopes. Undoubtedly they will soon announce some method whereby the scope shooter will be handicapped or give him a section of matches for his own type of sights, something similar to our N. R. A. program.

Who has courage enough to say that some day we are likely to be shooting a Dewar with scopes? The very thought would have been heresy two or three years ago; but now such a thing isn't at all outside the realm of possibilities. However, to give up the iron-sight feature in the big .22 shoot would bring many a wail from even this side. Better retain that feature in this event and promote another along similar lines, except that "any sights" might be used.

MICHIGAN STATE RIFLE AND PISTOL MATCHES

THROUGH the courtesy of the camp commander, a rifle and pistol match open to competitors from the Regular Service, Michigan National Guard, Michigan Naval Reserve Force, Organized Reserves, Marine Reserves, R. O. T. C., Veteran Chapters or Posts, Police Departments (including Vigilantes and Bank Guards), Civilian Clubs, and individual members of the National Rifle Association, will be held at Camp Custer, Battle Creek, Mich., Saturday, June 28, and Sunday, June 29, 1930.

Tentage and bedding will be provided.

Competitors will be assigned to established messes at a cost of 50 cents per meal.

Rifle ammunition will be issued at the firing points, but competitors must furnish their own pistol ammunition.

An entrance fee of $1 per man per match will be charged to cover the expense of pit and camp detail.

Match officials will be detailed from the Michigan National Guard, and scorers will be selected from the competitors.

The range will be open for practice from 8 a. m. to 11:30 a. m., Saturday, June 28.

Camp Perry rules will apply.

PROCEEDS OF BROOKLYN CLUB SHOOT DONATED TO INTERNATIONAL TEAM FUND

THE Brooklyn Rifle and Revolver Club held a re-entry Luck Match Thursday evening, March 27, at the Crescent Club Pistol range.

The prizes—three memberships in the U. S. R. A.—were given by a member and the proceeds of the match donated to the International Rifle Team fund.

The Colt luck targets were used and in Match B, Raymond Smith shot a perfect score of 90, 5 counting shots being allowed to each target. This is the first time this has occurred in the history of the club, and Mr. Smith received numerous congratulations from the officers and members.

The match aroused considerable enthusiasm, and all indications point to its being retained as a fixture in the club's spring program.

Pistol-shooting is done on Thursday evenings at the Crescent Athletic Club range, the riflemen shooting on Wednesday evenings at the Signal Corps Armory, 801 Dean Street.

The club has made considerable progress the past two years under the able leadership of the president, Mr. Albert J. E. Shay, aided by the energetic secretary, Mr. Alan A. Taylor.

It is also pleasing to report that shooting shows every indication of regaining its position as a major sport here in Brooklyn, and the assistance given it by the N. R. A. and the U. S. R. A. is quite evident and greatly appreciated.

OMAHA CLUB CLOSES INDOOR SEASON WITH BANQUET

THE Omaha Rifle and Revolver Club recently closed their indoor season with an oyster banquet at the Crounse Building.

The club enjoyed a very successful season both by increased membership and development of shooters.

During the month of March a tournament was staged giving every shooter an equal chance through classification.

CLASS A

First prize: R. E. Howser, loving cup, 1,431 x 1,600.

Second prize: A. N. Winther, bronze medal, 1,422 x 1,600.

Third prize: G. Meier, 250 rounds ammunition, 378 x 400, high sitting.

CLASS B

First prize: Archie McLean, gold medal, 1,388 x 1,600.

Second prize: A. Sowton, 250 rounds ammunition, 1,370 x 1,600.

Third prize: J. W. Stuart, silver medal, 371 x 400, high sitting.

Fourth prize: Edwin Dygert, silver medal, 310 x 400, high kneeling.

CLASS C

First prize: Louis Harte, bill fold, 1,245 x 1,600.

Second prize: Harold Fulton, silver medal, 376 x 400, high prone.

Third prize: Arthur Beard, 250 rounds ammunition, 342 x 400, high sitting.

Fourth prize: Frank Arnoldus, 250 rounds ammunition, 311 x 400, high kneeling.

SPECIAL PRONE MATCH

R. E. Howser, gold medal, 393 x 400.

SPECIAL STANDING HANDICAP MATCH

A. N. Winther, loving cup, 322 x 400.

May 1, the Omaha Rifle and Revolver Club will open their big-bore season, which will continue till late fall, and an interesting program is being arranged that will be of interest to all lovers of rifle-shooting.

COLORADO STATE ASSOCIATION HAS YEAR-ROUND PROGRAM

STARTING last October, the various N. R. A. clubs in the State started a series of intra-club shoots that were carried through to the first of February for the purpose of building up State-wide interest and club membership. The Northern Division then picked out the four teams that had made the best showing in the practice work, and the five individuals having the highest averages. The Southern Division on February 2 held an elimination meet in the State Armory building at Pueblo to select its four teams and its five high individuals. Denver district likewise held an elimination meet in the new 20-alley gallery in Denver and selected two high teams to attend the State meet which was held in the Pueblo Armory on Sunday, April 6. The course was 50 feet slow fire, standard N. R. A. targets, four positions, with 10 shots each position, free-rifle standing was not allowed, and rifles had to test at least a 3-pound trigger pull and not weigh over 10 pounds; iron sights. Only ten men were allowed to fire in a squad, which kept the air in good condition and allowed plenty of room for the southpaws.

The results after the smoke lifted and the scorers had done their duty:

Rocky Mountain Rifle Club of Denver:					
H. E. Morgan ...	74	96	93	99	362
Vinc Miller	80	90	91	98	359
Chas. Morrison ..	75	93	90	91	349
Verne Miller	74	89	84	95	342
Orval Robinson ..	75	83	87	96	341
	378	451	445	479	1,753
Livermore Rifle Club, Livermore	325	440	466	486	1,718
Colorado Rifle Club of Denver	350	415	466	478	1,709
Pueblo Rifle Club, Pueblo	353	422	447	466	1,688
Fowler American Legion Rifle Club, Fowler	330	428	463	466	1,687
Hastings Rifle Club, Hastings	337	434	437	478	1,686
Spanish Peaks Rifle Club, Walsenburg .	330	416	457	470	1,673
Fort Collins Rifle Club, Fort Collins	297	391	463	474	1,625
Loveland Rifle Club, Loveland	242	378	416	460	1,496
High five individuals of the Southern Division (picked before shoot)	360	439	457	481	1,737
High five individuals of the Northern Division (picked before shoot)	308	442	454	486	1,690
High Junior Team (Pueblo Centennial High School Boys).	312	390	450	479	1,631
Southern Division Ladies' Rifle Team (picked before meet)	273	384	432	462	1,551
High individual, John W. Lamb, of Pueblo (also high standing and prone)	88	82	96	100	366
High lady entrant, Ethel Wentworth, Pueblo	67	85	94	94	340

High kneeling, H. E. Morgan, of Denver, with a 96.
High sitting, C. J. Bollin, of Livermore, with a 98.

BANNER ATTENDANCE AT FAMOUS OLD BUTTE CLUB

THE Annual Medal Shoot of the Butte Gun Club has just been concluded for 1930. The largest attendance in several years participated. Grades and prizes are attained by the 10 highest scores of each shooter made in 10 Sundays. The course is 10 shots in standing position on the military 10-inch A target at 200 yards. The firing points are covered, but the range abounds in fishtail and cross winds against which the small-bore shooters have to contend during the months from January to April.

For the gold award (Expert) one using scope sight must make an aggregate of 487 out of 500, including one perfect score of 50. With iron sights one may qualify the first time with 480 out of 500, but to requalify must make 485 out of 500.

For the silver award the required score is 480 out of 500 with scope, or 455 out of 500 with iron sights (Sharpshooter).

For the bronze award (Marksman) the requirement with scope is 455, and with iron sights 415.

The shoots are held only on Sundays, commencing the second Sunday in January.

Five scores of possible 50's were made during the 1930 season. M. E. Sullivan, though not completing his medal scores, and shooting a Winchester 52, iron sights, in the military standing position, scored 17 consecutive bulls.

(A Unit of the National Rifle Association devoted to teaching every boy and girl in America the safe and accurate handling of the rifle.)

Conducted by H. H. Goebel

Biweekly Team Matches

CLOSING out the second of the five biweekly team matches to be fired in the last series of matches for the 1929-30 season, the Boys' Team of the Western High School, of Washington, D. C., came through in the prone matches with a five-man-team possible of 500, to again lead the teams classed in the select division. Taking first place, the team has again received 300 points, for a total of 600 for the series. The Episcopal Academy, of Overbrook, Pa., also had a fine five-man-team score, turning in 498 to take second honors with 270 points. Fresno High's prone team, of Fresno, Calif., with a team score of 495, placed third. The scores of the Western High School Team follow:

J. Kemper	100
Robert Glass	100
Walter Clarkson	100
Frederick Lace	100
T. Cook	100

Two of the schools listed originally in the B group turned in scores warranting advancement to the select group of A teams for the match to follow. New Trier High School's first team, of Winnetka, Ill., outranked the first team at the Blodgett Vocational High School, of Syracuse, N. Y., with scores of 486 and 485, respectively. Deerfield Shields High School, of Highland Park, Ill., tied for third place standing with the William Hall High School, of West Hartford, Conn., with scores of 483.

In the C Division five teams turned in scores of B Division rating and for the match to follow will fire in that division. The Ely Rifle Club, of Elyria, Ohio, was pretty much on top with a score of 475, followed by the first team of the Bonita Union High School, of La Verne, Calif., in second place with 467, and the Northern High School, of Detroit, Mich., third with 463.

There are but five teams entered in the Expert four-position division, with the Fresno High School Team continuing its fast pace, again taking first place in standing. Their five-man-team score fired in four positions is 1,896.

The team representing the Kemper Military School, of Boonville, Mo., always on Fresno's trail, followed with 1,852. Richmond Hill High School, of Richmond Hill, N. Y., came in third with 1,766.

Throughout the three series of team matches conducted during these past eight months there has been a most noticeable improvement in individual and team scores. Many of the clubs that were originally listed as an inexperienced outfit are now well up in standing in the higher grades. At the beginning there were but a few individual possible scores turned in by individuals. For the past matches recently completed, fully a dozen possibles have been made. In addition to the possible team score fired by Western High, possibles have been made by the following:

Ed Foy, Fresno High School.
Oscar Ivey, Fresno High School.
Emil Hergut, Richmond Hill High School.
Willoughby Sheane, Warren Harding High School.
T. Crawford, Episcopal Academy.
Walter Philips, Episcopal Academy.
C. Kewhnle, Jr., Episcopal Academy.
Jim Butterworth, Deerfield Shields High.

The bulletin for the second match listing all of the teams submitting returns with their standing in their respective divisions, with the total credits for this series and the three series, follows:

BULLETIN NO. 2—BIWEEKLY MATCHES. PRONE DIVISION

DIVISION A

Team and address	*Score*	*Pts.*	*Tot.*	*Tot. 3 series*
1. Western High, Boys, Washington, D. C.	500	300	600	4,020
2. Episcopal Academy, Overbrook, Pa.	498	270	540	2,760
3. Fresno High, Fresno, Calif.	495	240	510	3,570
4. Warren Harding High, Bridgeport, Conn.	494	210	450	2,880
5. Iowa City High, Iowa City, Iowa	479	180	390	1,250

DIVISION B

Team and address	*Score*	*Pts.*	*Tot.*	*Tot. 3 series*
1. New Trier High, 1st,* Winnetka, Ill.	486	200	360	1,740
2. Blodgett Voca. High, 1st,* Syracuse, N. Y.	485	180	340	1,780
3. Deerfield Shields High, Highland Park, Ill.	483	160	160	160
4. William Hall High, West Hartford, Conn.	483	160	160	160
5. Y. M. C. A., South Bend, Ind.	482	140	180	520
6. Turlock Union High, Boys, Turlock, Calif.	481	120	320	1,980
7. Richmond Hill High, Richmond Hill, N. Y.	480	100	300	2,130
8. Washington University, St. Louis, Mo.	480	100	280	1,100
9. Malden High, 1st, Malden, Mass.	478	80	200	1,700
10. Moline, Jr., R. C., Moline, Ill.	477	60	140	140
11. Morgan Park High, Chicago, Ill.	477	60	60	850

(Continued on page 36)

NEW CORRESPONDENCE INSTRUCTORS' TRAINING COURSE

THE following lesson, "Accuracy," is the sixth of a series of ten lessons to appear in succeeding issues of the *News*. Prepared primarily for instructors of Junior Rifle Corps clubs and adults who are newcomers in the shooting game, the course contains various subject matters not covered in the "Instruction Manuals."

These articles with questions for answer are attached to each and are available for distribution in pamphlet form. Instructors submitting answers to the complete course will be issued an instructor's commission in the Junior Rifle Corps.

NATIONAL RIFLE ASSOCIATION CORRESPONDENCE INSTRUCTORS' TRAINING COURSE

LESSON NO. 6—ACCURACY

(Reading Assignment: Chapters 5, 6, 7, and 12, "Instruction Manual.")

Accuracy depends on three primary factors: first, the rifle and ammunition; second, the ability of the shooter to properly aim his rifle and press the trigger; third, the proper firing position to afford the maximum control of the rifle, together with a comfortable, relaxed position which will not tire the shooter and result in pronounced heart action or muscle tremors.

The second and third essentials are thoroughly covered in the reading assignment. Such important features of the first essential as proper care of the rifle have been covered in previous lessons and are mentioned in Chapters 2 and 4 of the "Instruction Manual." There are, however, numerous mechanical considerations entering into the question of accuracy which are not mentioned in the Manual.

We have said that it is important that the barrel be kept in perfect condition. The reasons are not hard to find. A barrel which has been permitted to rust, even though the rust may have been apparently removed, remains roughened. The bullet, passing over the rough spot, has a certain amount of lead shaved off. This destroys the perfect roundness of the bullet and throws it out of balance, with resultant irregular shooting. Something of the same effect is obtained when a .22-caliber short cartridge is fired in a gun chambered for the .22 long rifle. The bullet, jumping from the cartridge case to the rifling, may hit

the lands harder on one side than on the other, scraping off more lead on one side than on the other. The bullet is out of balance and the result is inaccuracy.

Speaking of .22 shorts fired through .22 long-rifle barrels brings us to another accuracy consideration. Rifling is placed in the barrel to spin the bullet, carrying it point first to the target. If it is not spun rapidly enough it will begin to wabble before it gets to the target and will lose its accuracy. If it is spun too fast it may jump the rifling entirely, or if it holds the rifling it may be distorted in shape and thrown out of balance, or if neither of these things happen it may at least leave the muzzle with a gyrating motion, rendering accuracy out of the question. Accordingly, the twist of the rifling is carefully worked out for the cartridge which the rifle is designed to handle. The rifling in a .22-caliber long-rifle gun is different in twist from the rifling in a .22-caliber short gun. The mere fact that it is possible to shoot a .22 short in a gun chambered for the .22 long rifle therefore does not mean that it is good practice to do it. You will get better accuracy with a .22 short fired in a rifle made to handle that cartridge than you will with exactly the same ammunition in a rifle made to handle the .22 long rifle.

Another subject which might be mentioned at this point is the matter of proper seating of the bullet in the rifling. It is not desirable that the bullet have to jump from the cartridge case into the rifling. Such action in addition to scraping lead from the bullet and so unbalancing it, gives the hot powder gases a split second of time in which to crowd their way around the bullet and rush down the bore ahead of it. These gases have a terrific cutting action and will of themselves cut away a portion of the bullet as they rush past, still further increasing the possibility of the bullet being unbalanced when it emerges from the muzzle. The gases may even in time cut away some of the steel just in front of the chamber, giving exactly the same ultimate result as though the barrel had rusted at that point. In order to eliminate such a possibility, the good rifles are very carefully designed so that when the breech block closes and the cartridge case is fully seated in the chamber the bullet is already bearing on the rifling at a point known as the throat of the chamber. Then, when the cartridge is fired, the bullet instantly seals the bore and starts on its journey as a perfect cylinder. The throating of the chamber is a very nice piece of precision work in good target rifles.

This brings us back to the chamber of the rifle. If the bullet is to be properly seated in the throat of the chamber and started on its way with a minimum of disturbance it must be lined up properly behind the bore. If the chamber is too large, so that the cartridge is lying at an angle, much of the care taken in throating and rifling is going to be wasted. For this reason the chamber is bored to very close tolerances. Even a coating of oil left in the chamber will take up space that was intended for the copper cartridge case. As a result, the case does not have room to undergo the slight expansion which is normal; pressures will be higher; the bullet will leave the barrel faster and will strike the target at some point apart from its normal point of impact with that particular sight-setting. A couple of dry patches should always be run through the bore and chamber to remove oil and grease before the first shot is fired.

Coming now to the rearmost part of the chamber, we find three factors which have their effect on accuracy. Two of them are closely related—the anvil and the firing pin. The third factor is the face of the breech block or bolt. The face of the breech block or bolt must be so fitted into the rifle that when it is closed it will fully support the head of the cartridge, at the same time forcing the cartridge into a position where the bullet is resting in the throat of the chamber. The clearance between the head of the cartridge case and the face of the breech block is technically referred to as "head space." If there is not enough head space the cartridge may be deformed by being forced too far forward into the chamber. If there is too much head space the cartridge will not be properly supported at the rear and there will be a cushioning effect varying from shot to shot, which will cause the pressure to vary, that in turn causing the velocity to vary and that affecting the accuracy. The trouble may go even further and the improperly supported head of the cartridge may burst under the pressure of the powder gases. From this you will appreciate that rifle manufacturers give a great deal of attention to the question of head space.

When the rim-fire cartridge is forced into the chamber by the breech block or bolt the front edge of the cartridge rim rests against the rear of the receiver on what is generally known as the "anvil." The firing pin in striking the rim of the cartridge squeezes the priming composition up against the anvil. Primers are explosive compounds which will ignite under a sharp blow of this character. The primer, igniting, sends a flash of fire into the powder. The powder burns very rapidly, changing into gas, and it is the expansion of this gas which forces the bullet out of the barrel. It is easy to understand how varying intensity of the primer flash will affect the rapidity with which the entire powder charge ignites. A small or comparatively slow flash will result in a powder charge which starts to burn slowly. A hot, penetrating flash will ignite practically all of the powder at the same time. It is therefore essential to accuracy that exactly the same kind of a primer flash be sent into the powder each time the firing pin falls. To accomplish this, the rim of the cartridge case must be snug against the anvil for each shot, and the firing pin must strike a blow of the same intensity each time. Many riflemen have found their pet rifle suddenly beginning to show signs of very poor accuracy. The insertion of a new mainspring has brought the rifle back to its original capabilities of boring the bull's-eye. This may explain one of the reasons why ammunition of a certain type seems to give best results in one particular rifle. The priming composition as used by various companies varies somewhat, as does also the thickness and tensile properties of the copper used in their cartridge cases. Accordingly, an anvil and firing pin which will give the most uniform crushing and igniting effect with one brand may fail to give the same uniform effect with another brand. It is a well-established fact that each rifle seems to prefer some particular brand of ammunition, two rifles of identical make and consecutive serial numbers frequently requiring different brands of ammunition in order to get the best results.

In this same category of accuracy features falls the question of the firing pin itself. The anvil may be in as good shape as ever and the mainspring may have lost none of its strength, but the shape of the firing pin may have become altered. It may have become slightly flattened on one side or it may have hammered itself into a cup shape or into chisel shape. In any of these cases it will not be striking the primer in the same way that it formerly struck it. The blow may be falling as hard as ever on the inside edge near the edge of the priming mixture, but not striking hard enough toward the outside edge where most of the priming is located. Frequently a rifle which is in otherwise first-class condition but has ceased to be an accurate weapon can be put back into gilt-edge shape merely by the insertion of a new firing pin.

Leaving the rifle for a moment and turning to the cartridge itself, we find another element affecting accuracy likely to be overlooked by the tyro. It is the effect of heat. Powder and primer are, like all explosives, "unstable" chemical compounds. Their explosive and burning properties are affected by heat and moisture. A cartridge which has been heated will give higher pressures and velocities than one fired at a normal temperature. For this reason you will find experienced shooters protecting their cartridges from the rays of an unusually hot sun, because as the cartridges become hotter and hotter their point of impact on the target will change from shot to shot. The same condition applies when a cartridge is left in the chamber of a rifle for an unusually long time. Steady firing warms the barrel and the chamber. If the rifleman requires about the same length of time to get off each shot, every cartridge is warmed to about the same temperature before it is fired. On the other hand, if after a cartridge has been placed in the chamber the experienced rifleman has been required to wait longer than usual before shooting, you will generally find him taking the cartridge out, not shooting it at all, but inserting a fresh one. It is true that at 50 feet, where most of your work will be done, such a refinement as this is hardly necessary, but it is a point that affects accuracy and as an instructor it is a point with which you should be acquainted.

The effect of light on accuracy has already been mentioned in its proper place under "Sighting and Aiming." The effect of

loosened guard screws, etc., has been mentioned under "Care of the Rifle." The importance of proper position, holding and squeezing, holding of the breath, and similar subjects are thoroughly discussed in the "Instruction Manual." They are all factors in the big subject of accuracy. As a matter of fact, everything that has been said or done in connection with the rifle-shooting game through the centuries has been largely because of its bearing on this most important of rifle-shooting topics.

THE CAMP SEASON

STEPPING right along, growing as we go, the gallery and outdoor seasons have shown decided increases from membership and clubs affiliated to qualifications and matches completed. Now another field to serve is before us—the summer camps. From all indications this season, too, will be a particularly active one.

Replies and requests in answer to approximately 2,500 letters mailed to camp directors throughout the country announcing the program of the Junior Rifle Corps with its many services have been most encouraging. Camp directors generally have come to recognize the value of rifle-shooting training for the youth of our nation, together with the popular appeal it holds for the campers. Rifle-shooting is naturally an outdoor activity and one that should have a place in every camp program.

Along with the camps that are familiar with the Junior Rifle Corps program many new camps have made application and are prepared to conduct this sport for the first time. This year we will operate in more camps than ever before in history, for not only will we be serving the private boy and girl camps, but numerous Boy Scout, Y. M. C. A., institutional, and independent camps as well. Last year 275 camps accepted these services, and this number is certain to pass the 300 mark.

In addition to the instruction and course of medal decorations the intercamp matches are sure to be as strong as ever. Both the boys' and girls' camps have shown a keen interest in these national events. The matches again fired in distinct divisions may be completed any time up to August 1, and returns are due at Headquarters not later than the 10th. This early date is set to allow for the rescoring of targets, the engraving of trophies, and their shipment to camp before closing.

If you as a member of the Corps attend a camp that does not conduct the program of the Junior Rifle Corps, we suggest that you consult your camp director and acquaint him with this work. He will be glad to install a range if he knows there is a demand for it.

The season at Camp Wood, Elmdale, Kans., promises to be one of the best experienced, and Mr. Bruce W. Tallman announces that they are going to give any other camp a run for their money in the record of individual qualification accomplishments. For several years this camp led by a wide margin in the individual qualifications presented, but last year unfavorable conditions resulted in a handicap to the program and the standing of second place in the individual qualifications presented.

EXPERTS AND DISTINGUISHED RIFLEMEN

CONTINUING the pace set earlier in the year, 60 of our members qualified as Expert Rifleman and 3 placed on the honor roll of Distinguished Rifleman during the past month. With a general increase all along the line in the Junior program a new high record for Expert and Distinguished Rifleman is sure to be established. For the first five months of this year we have qualified 136 Experts as compared with 191 for the full year 1929.

All records are made to be broken, and with the added activity shown the future is most encouraging. Our object, "to teach every boy and girl in America the safe and accurate handling of the rifle," is fast becoming a reality.

Starting a long course of qualifications which seems to have no end, it takes considerable practice and patience on the part of a contestant to fire 500 record shots. However, figures prove that members are doing it, and doing it consistently. If you at any time become a little discouraged because you are not making as rapid progress as at first anticipated, keep plugging along with deliberate determination and the goal will soon be reached.

EXPERT RIFLEMEN

John E. Wadsworth, Brooklyn, N. Y.
Robert Brining, Dayton, Ohio.
Frank Anderson, Chicago, Ill.
William Olson, Jr., Ozone Park, N. Y.
Ray Sandberg, Evanston, Ill.
Ernest Monroe, Chicago, Ill.
Tom Miller, Chicago, Ill.
H. Miller, Chicago, Ill.
Richard F. Boyd, III, Charlotte, N. C.
Percy C. Hutchens, Oak Ridge, N. C.
Raymond Sheets, St. Louis, Mo.
Ivar Almskog, Brooklyn, N. Y.
Russell Scott, West Hartford, Conn.
Geo. M. Robben, Jr., Cheyenne, Wyo.
Ruth E. Caywood, Council Bluffs, Iowa.
John S. Setchell, Brooklyn, N. Y.
Earl Conner, Knoxville, Tenn.
Jim McAuliffe, Knoxville, Tenn.
Millard Warren, Knoxville, Tenn.
Louis Anderson, Knoxville, Tenn.
Garrett Loftis, Knoxville, Tenn.
Harry Tubbs, Knoxville, Tenn.
Robert Pierce, West Lafayette, Ind.
Walter Leland, Owatonna, Minn.
Jack R. Vinson, Jr., Cadiz., Ky.
Stewart Howe, Canon City, Colo.
Randolph Cressman, Norristown, Pa.
Milton Goodman, Brooklyn, N. Y.
Joseph Bernstein, Brooklyn, N. Y.
Alfred Boldt, Canon City, Colo.
Roy Walker, Canon City, Colo.
John Carman, Cincinnati, Ohio.
Carl H. Sachs, Jr., Chicago, Ill.
Richard F. Singer, St. Louis, Mo.
Dudley W. Rockwell, West Hartford, Conn.
Edgar Wussler, St. Charles, Mo.
Gordon Nichols, Ridgewood, N. J.
Myron L. Rice, Glen Rock, N. J.
Clifford Wanebo, Laramie, Wyo.
Robert N. Lawson, St. Louis, Mo.
Russell Dorrell, Washington, D. C.
Evelyn McGilvray, Council Bluffs, Iowa.
Margaret Hill, Council Bluffs, Iowa.
Frances Wheatcraft, Council Bluffs, Iowa.
Thornwell Jacobs, Culver, Ind.
Ira W. Martin, Culver, Ind.
Richard G. Tarr, Culver, Ind.
Robert J. Scott, Culver, Ind.
Hunt B. Jones, Culver, Ind.
Robert Beatty, Culver, Ind.
James A. Bender, Culver, Ind.
Luther A. Holmes, Culver, Ind.
John R. Burnes, Culver, Ind.
Franklin F. Ogden, Culver, Ind.
Frank B. Miller, Jr., Culver, Ind.
William C. Barnes, Culver, Ind.
Jack Ferber, Washington, D. C.
William Lusby, Washington, D. C.
John Smith, Washington, D. C.
Leslie Kammerer, Chicago, Ill.

DISTINGUISHED RIFLEMEN

Vincent Miller, Denver, Colo.
Thornwell Jacobs, Jr., Culver, Ind.
Ira Martin, Culver, Ind.

BIWEEKLY TEAM MATCHES

(Continued from page 34)

12.	Western High, Girls, Washington, D. C.	476	40	200	1,140
13.	Central High, St. Paul, Minn.	474	20	100	860
14.	Wilby High, Waterbury, Conn.	472	...	...	860
15.	Lewis and Clark Hi, 1st, Spokane, Wash.	471	...	100	580
16.	New Trier High, 2nd, Winnetka, Ill.	471	...	...	...
17.	Blodgett Voca. High, 2nd, Syracuse, N. Y.	468	...	...	770
18.	Kingswood School, West Hartford, Conn.	462	...	...	190
19.	Lewis and Clark High, 2nd, Spokane, Wash.	458	...	...	410
20.	Roosevelt Jr. R. C., Asbury Park, N. J.	454	...	40	100
21.	Owensboro High, 1st, Owensboro, Ky.	448	...	60	60

* Division A teams for match of May 3.

DIVISION C

	Team and address	*Score*	*Pts.*	*Tot.*	*Tot. 3 series*
1.	Ely Rifle Club,* Elyria, Ohio	475	100	150	870
2.	Bonita Union Hi, 1st,* La Verne, Calif.	467	90	150	690
3.	Northern High,* Detroit, Mich.	463	80	180	340
4.	Stadium High, Boys,* Tacoma, Wash.	462	70	80	300
5.	Roselle High,* Roselle, N. J.	460	60	140	350
6.	Stadium High, Girls, Tacoma, Wash.	456	50	50	50
7.	Blodgett Voca. High, 3rd, Syracuse, N. Y.	455	40	40	620
8.	Dundee High, Dundee, Ill.	455	40	130	560
9.	Salina High, 2nd, Salina, Kans.	454	30	40	170
10.	Dunkirk Jr. R. C., Dunkirk, N. Y.	453	20	20	20
11.	Malden High, 2nd, Malden, Mass.	443	10	40	800
12.	Vinita High-Y. Jr. R. C., Vinita, Okla.	441	...	...	...
13.	Bonita Union Hi, Girls, La Verne, Calif.	435	...	...	...
14.	Bonita Union Hi, 2nd, La Verne, Calif.	433	...	...	100
15.	Y. M. C. A., Tulsa, Okla.	424	...	70	70
16.	Lewis and Clark Hi, 3rd, Spokane, Wash.	224	...	...	...
17.	Owensboro High, 3rd, Owensboro, Ky.	423	...	...	...
18.	Owensboro High, 2nd, Owensboro, Ky.	420	...	20	20
19.	Freehold Mil. Sch., 2nd, Freehold, N. J.	415	...	...	...
20.	Turlock Union Hi, Girls, Turlock, Calif.	413	...	...	50
21.	South High, South Brownsville, Pa.	405	...	...	...

22. Bad Axe High, Bad Axe, Mich.	404	...	...	100
23. Owensboro High, 5th, Owensboro, Ky.	401	...	...	...
24. Greenfield Boy Sct. R. C., Greenfield, Mass.	400	...	...	90
25. Freehold Mil. Sch., 1st, Freehold, N. J.	391	...	...	...
26. Owensboro High, 4th, Owensboro, Ky.	381	...	...	...
27. Belgrade Jr. R. C., Belgrade, Mont.	366	...	...	...
28. Beavers Jr. R. C., Beloit, Kans.	129	...	...	...

* Division B teams for match of May 3.

EXPERT—FOUR POSITIONS

Team and address	*Score*	*Pts.*	*Tot.*	*Tot. 3 series*
1. Fresno High, Fresno, Calif.	1,896	100	200	1,240
2. Kemper Mil. Sch., Boonville, Mo.	1,852	90	180	1,300
3. Richmond Hill High, Richmond Hill, N. Y.	1,766	80	160	1,050
4. Bonita Union High, La Verne, Calif.	1,553	70	120	180
5. Owensboro High, Owensboro, Ky.	1,445	60	130	130

OFFICIAL BULLETINS, N. R. A. GALLERY SCHOLASTIC TEAM MATCHES

NO. 46—INTERSCHOLASTIC TYRO TEAM MATCH

6 ENTRIES

Conditions.—30 record shots prone, each man.

Organization and address	*1st stage*	*2nd stage*	*3rd stage*	*Total*
1. New Trier High School, Winnetka, Ill.	486	484	487	1,457
2. Centennial Jr. Rifle Club, Chicago, Ill.	485	486	479	1,450
3. Deefield-Shields High School, Hyde Park, Ill.	472	485	489	1,446
4. McDonogh Sch. Rifle Club, McDonogh, Md.	476	482	486	1,444
5. Poly. Prep. Country Day Sch., Brooklyn, N. Y.	479	479	486	1,444
6. Kingswood School Rifle Club, West Hartford, Conn.	455	457	470	1,382

NO. 58—N. R. A. INTERSCHOLASTIC TEAM MATCH

8 ENTRIES

Conditions.—First stage, 20 shots prone; second stage, 10 shots prone, 10 kneeling; third stage, 10 shots prone, 10 standing.

Organization and address	*1st stage*	*2nd stage*	*3rd stage*	*Total*
1. Fresno High School, Fresno, Calif.	988	979	958	2,925
2. Western High School, Washington, D. C.	998	977	924	2,909
3. Central High School, Washington, D. C.	987	959	915	2,861
4. Thomas Jefferson Hight Sch., Brooklyn, N. Y.	977	948	927	2,852
5. Iowa City High Sch., Iowa City, Iowa	975	927	884	2,786
6. Grover Cleveland High Sch., St. Louis, Mo.	975	920	880	2,775
7. Poly. Prep. Country Day Sch., Brooklyn, N. Y.	964	871	866	2,701
8. Kingswood Sch. Rifle Club, West Hartford, Conn.	915	956	811	2,582

NO. 59—N. R. A. MILITARY SCHOOL CHAMPIONSHIP MATCH

3 ENTRIES

Conditions.—Three stages: First stage, 10 shots prone, 10 sitting; second stage, 10 shots prone, 10 kneeling; third stage, 10 shots prone, 10 standing.

Organization and address	*1st stage*	*2nd stage*	*3rd stage*	*Total*
1. Culver Military Academy, Culver, Ind.	976	959	914	2,849
2. St. John's Military Acad., Delafield, Wis.	960	951	923	2,834
3. New Mexico Mil. Inst., Roswell, N. Mex.	973	950	902	2,825

NO. 60—GIRLS' INTERSCHOLASTIC TEAM MATCH

Conditions.—Three stages: Each stage consists of two sighting shots and 10 shots for record, prone.

Organization and address	*1st stage*	*2nd stage*	*3rd stage*	*Total*
1. Central High Sch. (Team No. 1), Washington, D. C.	488	489	485	1,462
2. Western High School, Washington, D. C.	479	474	481	1,434
3. Central High Sch. (Team No. 2), Washington, D. C.	477	476	480	1,433

MOSTLY PERSONAL

A VERY favorable comment was recently written us by Lieut. Thomas M. Crawford, instructor of the Castle Heights Rifle Club, Lebanon, Tenn. This club has made a remarkable record in the field of individual qualifications since its organization, and only recently qualified its first Expert Rifleman. This lad was Cadet J. R. Vinson, Jr., of Cadiz, Ky., who successfully progressed through the intermediate stages and the many bars in specified positions. Lieutenant Crawford advises that there is nothing in the entire curriculum which appeals to the boys so well as the Junior Rifle Corps program.

Fourteen of our Junior leaders and members of the Senior organization have this month completed requirements of the Correspondence Instructors' Training Course and received commissions as instructor, while two of our Junior members have been commissioned assistant instructor in the N. R. A. J. R. C. Of this number ten have also submitted qualification targets for the instructor's medal, requiring targets of the Junior Sharpshooter grade. These men are as follows:

C. W. Tilley, Harrisburg, Pa.
Jerry Minarik, Chicago, Ill.
C. Robert Belt, Coffeyville, Kans.
Lee Edwards, Bridgeport, Conn.
John T. Bell, Hackensack, N. J.
Edgar S. Hansen, Elmwood Park, Ill.
Richard E. Weaver, Oak Ridge, N. C.
R. Fischer, La Verne, Calif.
Paul J. Lamb, Brazil, Ind.
Victor C. Simons, Manistee, Mich.
C. B. Edwards, Wharton, N. J.
Carleton Root, Appleton, Wis.
P. R. H. Washburn, Brooklyn, N. Y.
John A. Batley, Jr., Dover, N. J.
W. H. Cranmer, Spring Lake, N. J.
R. S. Dolber, Waltham, Mass.

The Junior Rifle Club of Longmont, Colo., wishes to communicate with other interested Junior Rifle Clubs throughout the country and arrange for shoulder-to-shoulder and postal team competition. All inquiries should be made of Mr. Glaide Hogsett, Executive Officer, Longmont, Colo.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of THE N. R. A. JUNIOR RIFLE CORPS NEWS, published monthly at Washington, D. C., for April 1, 1930.

City of Washington, District of Columbia, ss.:

Before me, a Notary Public, in and for the District aforesaid, personally appeared Herbert H. Goebel, who, having been duly sworn according to law, deposes and says that he is the editor of the N. R. A. JUNIOR RIFLE CORPS NEWS, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, National Rifle Association of America, Washington, D. C.

Editor, Herbert H. Goebel, 816 Barr Building, Washington, D. C.

Managing Editor, none.

Business Managers, Executive Committee, National Rifle Association of America.

2. That the owner is: National Rifle Association of America.

That the principal officers are:

Hon. Benedict Crowell, Cleveland, Ohio, President.

Maj. Gen. F. C. Ainsworth, Washington, D. C., First Vice-President.

Col. G. A. Fraser, Bismarck, N. Dak., Second Vice-President.

Karl T. Frederick, New York City, N. Y., Third Vice-President.

Brig. Gen. M. A. Reckord, Baltimore, Md., Executive Vice-President.

C. B. Lister, Washington, D. C., Secretary-Treasurer.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest, direct or indirect, in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is— (This information is required from daily publications only.)

H. H. GOEBEL, *Manager and Editor.*

Sworn to and subscribed before me this 7th day of April, 1930.

ELSIE N. ENGLAND,
(Seal) *Notary Public.*
(My commission expires February 17, 1933.)

SHOOTING EQUIPMENT AND SUNDRIES AVAILABLE TO JUNIOR MEMBERS AT N. R. A. RATES

Stazon—The Handy Kit—$1.00.

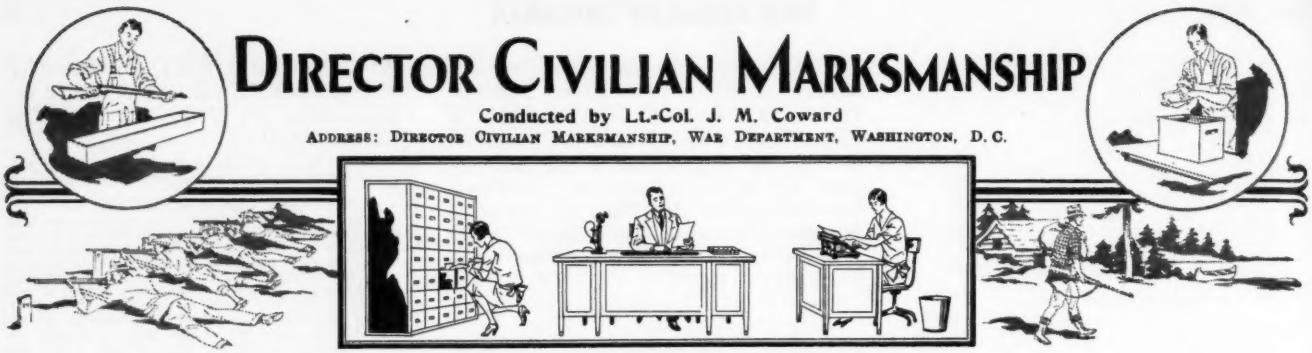
Stazon Preservative, per Tube	$ .20
Stazon Chloroil Solvent, per Bottle	.35
Stazon Rust Off, per Tube	.30
Stazon Gun Oil, per Can	.30
Cosmolene, per Can	.50
B. S. A. Saftipaste	.45
Hoppe's No. 9 Solvent	.45
"Fiendoil"—Sample Bottle	.15
"Fiendoil"—Full-Size 2-ounce Bottle	.50

TARGETS

Single-Bull, per 1,000	$1.75
Single-Bull, per 500	1.00
Five-Bull, per 1,000	2.00
Five-Bull, per 500	1.25

N. R. A. SERVICE CO., INC.

816 Barr Building - - Washington, D. C.



DIRECTOR CIVILIAN MARKSMANSHIP

Conducted by Lt.-Col. J. M. Coward

ADDRESS: DIRECTOR CIVILIAN MARKSMANSHIP, WAR DEPARTMENT, WASHINGTON, D. C.

SALE OF 1928 NATIONAL MATCH RIFLES

THERE are a number of 1928 National Match rifles at Springfield Armory which are available for sale to members of the National Rifle Association at $45.50 each, plus a packing charge of $1.34.

These rifles are in every way equal to any other National Match rifles. They are fitted with excellent pistol-grip stocks, and are drilled and tapped for the Lyman No. 48 receiver sights.

PRICE OF SPORTER INCREASED

EFFECTIVE May 20, the price of the .30-caliber N. R. A. Springfield Sporter was increased from $40 to $42.50. No more of these rifles are available at the former price.

The barrels of these rifles are star-gauged and specially selected, the same as all other types of National Match rifles.

AMMUNITION

THE shooting season is well on in many localities, while in others the shooters are impatiently waiting for a chance to try out those new rifles purchased during the winter. Have you checked up on your supply of ammunition and targets to see if you have an adequate supply to carry you over the outdoor shooting season? The Director of Civilian Marksmanship offers the following ammunition at attractive prices:

Cartridges, ball, caliber .30, Model 1906 (low grade) 150-grain flat-base bullet:
- Per case of 1,200 rounds $21.60
- Per bandolier of 60 rounds 1.08

Cartridges, ball, caliber .30, M1, Service, 172-grain, 9° boat-tail bullet, gilding-metal jacket:
- Per case of 1,200 rounds 52.39
- Per bandolier of 60 rounds 2.69

Cartridges, ball, caliber .30, M1922E, 170-grain, 6° boat-tail bullet:
- Per case of 1,200 rounds 37.80
- Per bandolier of 60 rounds 1.89

Cartridges, ball, caliber .30, Model 1898, Krag 220-grain round-nose, gilding-metal jacket bullet, noncorrosive primer:
- Per case of 1,000 rounds 31.50
- Per 100 rounds 3.15

Cartridges, ball, caliber .22 short:
- Per case of 10,000 rounds 15.00
- Per 1,000 rounds 1.50

Cartridges, ball, caliber .45, Model 1911, for 1917 revolver:
- Per case of 1,200 rounds $35.40

Cartridges, ball, pistol, caliber .45, Model 1911:
- Per case of 2,000 rounds 59.00

There is a packing charge of 50 cents per case on all ammunition purchased in case lots, and 15 cents for each additional case in same order, and of 75 cents for less than case lots. Make all remittances either in the form of a money order, bank draft, or certified check, payable to the Director of Civilian Marksmanship.

STAR-GAUGED RIFLES

NUMEROUS communications are being received from time to time in regard to the U. S. rifle, caliber .30, Model 1903 style, N. R. A., Springfield Sporter; the U. S. rifle, caliber .30, Model 1903 style, National Match; the U. S. rifle, caliber .30, style T, heavy barrel; and the U. S. rifle, caliber .22, Model 1922, M1. A full description of these rifles, together with photographs, and shot groups were published in the December, January, February, and March editions of the RIFLEMAN.

The barrels of the Springfield Sporter, National Match, and the style T, heavy-barrel rifles are all star-gauged and specially selected.

These rifles are sold only as assembled at the armory, and as described in the RIFLEMAN. Purchasers desiring special work, such as drilled and tapped receiver for telescopic sight, should arrange to have this extra work done by a competent gunsmith, or commercial house specializing in that line of work.

Arrangements to have this special work done should be made prior to the placing of the order for shipment from the armory, as much time and additional cost of transportation can be saved by having the rifle shipped direct from the armory to the place where this special work is to be done.

SUPPLY OF KRAG RIFLES EXHAUSTED AT BENICIA

THE stock of Krag rifles, both in the regular Krag, caliber .30, Model 1898, and the modified Krag, cut to carbine length (22 inches), and fitted with Model 1903 front sight, has become temporarily exhausted at Benicia Arsenal, California.

A new supply of these rifles is being shipped to Benicia Arsenal, and should be ready for delivery about July 1. Members of the National Rifle Association residing on or near the Pacific coast can have the regular Krag rifles shipped to them from one of the Eastern arsenals, but the modified Krag, cut to carbine length, is supplied only at Benicia Arsenal.

All orders for the modified Krag are being returned, and it is requested that no orders for this rifle be sent to this office until after July 1.

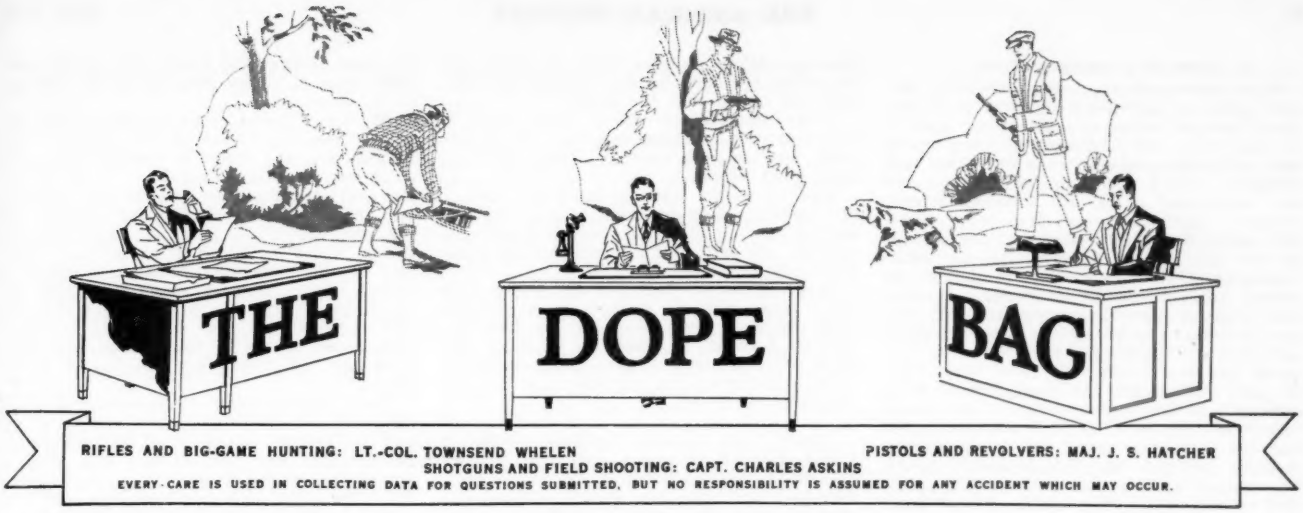
ILLEGIBLE SIGNATURES

IN VIEW of the fact that a great many orders received from members of the National Rifle Association, as well as from rifle-club officials, are signed in an illegible hand it is requested that the name of the purchaser or club official be printed or typed under his signature, as this will aid in identifying the individual, and in locating his name in our files, and will also expedite the approval of his order for the purchase of equipment and supplies.

HEAVY BARRELS, STYLE T

A NUMBER of heavy barrels (barrel only), style T, special target, are being manufactured at Springfield Armory in 28- and 30-inch lengths. The price of these style T heavy barrels has been tentatively fixed at $36.50

Production of the U. S. rifle, caliber .30, Model 1903, style T, heavy barrel, is nearing completion, and these rifles are now ready for sale and delivery to members of the National Rifle Association at $85 each, plus a packing charge of $1.34. A description and photograph of this rifle was published in the December edition of the RIFLEMAN. Style T barrel and receiver assembly only $41.25.



RIFLES AND BIG-GAME HUNTING: LT.-COL. TOWNSEND WHELEN
PISTOLS AND REVOLVERS: MAJ. J. S. HATCHER
SHOTGUNS AND FIELD SHOOTING: CAPT. CHARLES ASKINS
EVERY CARE IS USED IN COLLECTING DATA FOR QUESTIONS SUBMITTED, BUT NO RESPONSIBILITY IS ASSUMED FOR ANY ACCIDENT WHICH MAY OCCUR.

A Free Service to Target, Big Game and Field Shots — All questions answered directly by mail

Questions Most Frequently Asked

By TOWNSEND WHELEN

THE following notes are given to the readers of the Dope Bag more or less in self-defense. Every week I receive dozens of letters covering these points.

Lyman No. 438 Telescope Sights

Lyman has just placed this cheap little twenty-dollar telescope sight on the market, and the first week it was announced I was deluged with questions about what I thought of it. Well, here is what I think after a more or less extended use of it on the rifle range and on woodchuck hunts: It is a perfectly splendid glass for the money. It is well made, has excellent lenses capable of standing the recoil even of high-power rifles. It is free from color fringe and parallax. It is not the equal of the fine Lyman 5A telescope, but it is a perfectly splendid scope for those who can not afford the 5A. It is a target telescope, and is not suitable for big-game shooting. It will do splendidly for target-shooting or for squirrel- and woodchuck-shooting. The field of view is not large enough, nor is there enough lateral and longitudinal eye relief for shooting at running game. The telescope is mounted on the barrel by blocks, 7.2 inches between centers, in exactly the same way and on the same blocks as are used for the Winchester A5 and Lyman 5A scopes. The telescope slides forward in its mounts when the rifle is fired and must be pulled back by hand to the firing position before firing the next shot, exactly like other target telescope sights must be pulled back. The rear mounting has screw adjustments for elevation and windage. One complete revolution of either screw changes the point of impact 6 inches at 50 yards or 12 inches at 100 yards. The heads of the screws have eight graduations numbered from 0 to 3½. A movement of one graduation changes the point of impact ¾ inch at 50 yards or 1½ inches at 100 yards.

The telescope is an accurate, durable, and perfectly satisfactory instrument, and is worth far more than Lyman is asking for it. It is particularly adapted to the Winchester Model 52 and .22-caliber Springfield rifles, these having screw holes already tapped and drilled for the blocks. For the man who has to economize, and who has to do all his rifle hunting in the little open places near home, let me suggest a Stevens Ideal rifle for the .25 rimfire cartridge, or a Savage bolt-action rifle for the .25-20 cartridge equipped with this telescope. Both outfits with Winchester, Remington, or Western ammunition are good for 1-inch groups at 50 yards or 2½-inch groups at 100 yards. These are fine varmint rifles. The Lyman scope is also excellent on the Krag, or on the Savage Model 40 or 45 rifles in .250-3,000 caliber.

Supplemental Chambers and Auxiliary Cartridges

Every week I get a number of letters about these. Mostly the correspondents want to use them for cheap target practice in the Krag. They both fit in the chamber of the rifle and permit a .32-caliber pistol cartridge to be fired through the .30-caliber barrel. They are absolutely no good for target practice. The very best accuracy one can get from them in any rifle and with any pistol cartridge is about a 2½-inch group at 25 yards. Beyond this range they are entirely unreliable. As a good shot can hold for about ½ inch at 25 yards, naturally he will get no benefit from practice with them. They are designed to use the small pistol cartridges for small-game shooting in high-power rifles. For this purpose they are pretty good. Throughout almost all the big-game country of the North grouse are very plentiful and are a welcome addition to the bill of fare. These northern grouse are very tame compared with the southern birds, which are continuously hunted. One can almost always get standing shots at 10 to 20 yards, either on the ground or in trees. Slip out the high-power cartridge, slip in the supplemental chamber or auxiliary cartridge loaded with its proper pistol cartridge, and elevate the rear sight to the proper graduation (usually the graduation corresponding to about 500 yards), and you can shoot grouse through the body and have something left for the table. The report of the cartridge will seldom disturb big game a quarter of a mile away.

The use of the pistol cartridge will do no harm to the barrel of the rifle provided it be properly cleaned that evening. Use a brass wire bristle brush and any cleaning solution. And, by the way, the bore of the rifle must be clean when using these pistol cartridges. If the bore contains the fouling of high-power cartridges the pistol bullets will scatter all over the landscape.

The Best Reloading Tools

Lots of correspondents ask me what reloading tools are best. I have used all makes—Ideal, Bond, Belding & Mull, and Perfection—and I find them all good. If instructions are followed carefully one will have equal results with all of them. I do not think a straight-line tool has any real advantage over the tong tool, except that I think that straight-line resizing of the necks of cartridge cases is very desirable. I do not believe that good results can be had from reloading unless the shooter study up the fine points, and I particularly recommend that the reloader procure and study either or both the "Ideal Handbook" and Mattern's "Handloading Ammunition." We do not answer reloading questions from those who have not done so, because we do not wish to assume any responsibility for accidents that may occur due to lack of the proper safety precautions, knowledge of powders, and how to measure them, etc.; and, moreover, until the shooter has studied these books we simply do not talk the same language. Our recommendation of the "Ideal Handbook" does not mean that we recommend Ideal tools above all others. The information in the "Ideal Handbook" is applicable to all makes of tools.

Comparing Rifles

Please do not ask me to "compare" various makes of rifles. I can not do so either in justice to myself or the various makers of rifles. If you want to know the best rifle for a certain purpose, please give me a chance. Tell me what you want to hunt and in what part of the country, or what kind of target-shooting you want to do. Also tell me what you can afford to pay—whether you can afford the finest handmade rifles, or telescope sights, or must confine yourself to a quantity-production rifle with iron sights.

In every mail I get lots of letters asking for information on the best rifle for a certain purpose, and then the reader proceeds to tell me what he is thinking of getting. Under such circumstances I can discuss that one rifle only because naturally I can not deliberately recommend that that writer get an arm of another make. That would open me up to a charge of favoritism and commercialism—things I try absolutely to avoid.

Consult Catalogues First

Many correspondents (they are only the new members and the beginners) write me about various rifles or cartridges, and it is clear from their letters that they know next to nothing about these rifles or cartridges. Also I am frequently asked for the "ballistics" of certain well-known cartridges. Now the very first step, when one begins to get interested in rifles, should be for the shooter to send for the catalogues of the rifle and cartridge makers in whose products he is interested. Inclose two 2-cent stamps for postage and you will get the catalogue promptly. Study it first, then we will begin to talk the same language and my letters will be of some help to you. Particularly the catalogues of Winchester, Remington, Western, the catalogues of Lyman, King, and Marble sights, and the catalogues of all the reloading-tool makers, and the "Ideal Handbook," should be obtained by everyone interested in rifles and rifle-shooting. We can no longer copy catalogue dope into our letters. If we did no one would get long, helpful letters. There would be no time to answer them. It sort of goes against the grain to tell a correspondent merely to "send for the catalogue of so and so" in reply to a long letter of twenty questions; but there is no other way out of it.

Letters In General

Will my correspondents please not include in their letters questions that should properly be sent to the editor, or to the D. C. M., or to the N. R. A. Service Company, or to the secretary. I do not live in Washington. I can not call up these parties on the phone and get the answers, and I have to answer so many questions that I no longer have time to refer parts of letters to the proper places to have them answered. All I can do is to say, "Write to so and so." Also, won't you please print your name and address plainly on your letter. Lots of signatures and addresses are entirely illegible. Another thing: inclose stamps, but don't send self-addressed envelopes. Self-addressed envelopes are never large enough to contain all the dope I want to send to my correspondents. In remailing the letters to me they often get separated from the letter, and they are an excuse for not putting the full name and address on the letter. Lastly, please address all the Dope Bag editors care of the Dope Bag, The American Rifleman, Barr Building, Washington, D. C. Lots of my letters are greatly delayed because they are merely addressed "Washington, D. C.," or to the D. C. M.

I ought to beg you fellows' pardon for putting out all this stuff; but please realize, besides this Dop Bag work, I have a real job which takes me from 8 a. m. to 5 p. m. every day. The Dope Bag letters are now averaging nearly a thousand a month, and when a fellow has to answer that many letters evenings and Saturdays and Sundays he appreciates a little cooperation and help. I am not trying to stave off letters. I want to help other riflemen all I can with good, helpful letters.

TOWNSEND WHELEN.

PITTED SHOTGUN BARRELS

A FEW months ago I picked up a little Greener, 28-gauge ejector, which showed considerable use. The gun is generally in excellent shape, however, and is tight and smooth-working. The barrels are steel, 26 inches long, and the patterns from them are beautifully regular and good.

From the breech to within about 10 inches of the muzzle the pitting is negligible, and from the muzzle down for about 2 inches the pitting is hardly noticeable. Between those points, however—that is, for about 8 inches in each barrel—the pitting has bitten into the steel.

These barrels are very light, and it seems to me reboring can not be considered; nor would I want to chance spoiling their good patterns.

What I would like to know is: Can I by careful cleaning and oiling prevent further damage to these barrels from corrosion? Or will it be impossible to keep those pits from eating deeper?

This particular feature of pitting has never come into my experience, as I have kept my own guns as nearly spotless inside as I could. I think so much of the little Greener since I have used it that I hope I can keep the barrels from further damage.—W. H. K.

Answer (by Captain Askins). What I would do with that gun would be, not to rebore it, but to send it to some good gunsmith and have the barrels polished out with oil and fine emery. If this is carefully done the barrels need not be touched except where the pits are most in evidence, and the patterns will not be changed. You might do this yourself, if you have time and work with care. What I did with a similar barrel was to make a hickory stick to about fit the bore, the end of this stick being roughened to hold the rags, and split. Into this split a wedge was inserted—a wedged stick which projected from the barrel at the opposite end from the one that I worked upon. Use on the rag fine emery and oil. Push the stick into the point where the pitting starts, and then drive your wedge in to tighten the rags or the patch. Then place barrels in a vise, properly protected, of course, and work the rod lengthwise. As the rod wears it can be tightened with the wedge, and emery and oil can be renewed by loosening the wedge and removing the rod, to be again tightened as before when replaced. All this kind of thing a gunsmith can do better than you can, if you carefully explain what you want done, and what you do not want done. It won't do to touch the choke, and the very slight enlargement you may give the barrels over the pitting won't affect the shooting. At the particular section of the barrels where these pits are you are not likely to weaken the barrels with the polishing, because pressures are low at this point.

You may not be able to get all the pits out, but you will reduce and polish them greatly, thereafter being able to keep them from growing any worse. Again, if the pits are no more than three thousands of an inch deep, you may be able to remove them entirely. The Ithaca Gun Co. would do all this; but I'd be afraid they would repolish the barrels throughout, except in the choke, with a possibility of slightly altering the shooting.

SCOPES AND IRON SIGHTS

WE ARE dealers in sporting goods, and the writer is a rapidly developing gun crank and very much interested in your articles in the RIFLEMAN.

We are having some calls for telescopes, and this winter I purchased one of the new Noske 2½-power hunting scopes for use on my Springfield when hunting big game in Canada, which has been my hunting ground for the past few years.

The rifle on which it was desired to use the scope was a Springfield Sporter with a rebuilt stock, patent sling swivels, and other new paraphernalia, and it was sent directly to Noske for mounting the scope. When it returned the scope was mounted just low enough so that the Lyman 48 could not be used, but it was also mounted so that the lower side of the eyepiece was 3/4 of an inch above the bridge of the receiver.

Mr. Noske insists that Lyman sights are of no value on a hunting rifle when it has a telescope, and failed to carry out my instructions in this connection. It occurs to me that if we are to discard the Lyman, the scope should be mounted as low on the gun as it is possible to mount it, which would be clear down to the outer rim of the eyepiece almost touching the bridge of the receiver, since if we are going to have to lift the head to look through the scope at all, why not lift it 1/4 inch higher and look over the Lyman and have both pair of sights for use in an emergency?

Your opinion and suggestions in this case will be appreciated very much. If we are to have the scope 3/8 of an inch above the bridge, why not fit the gun with a set of low sights that can be used under it? The sight that has been suggested is a bolt-sleeve sight and a low front sight of some kind. What kind would you suggest, and where may they be obtained?

The Noske scope seems to work very nicely, and the adjustments are very convenient, both windage and elevation being located in the scope barrel. However, there is some question in my mind as to their durability and accuracy when built in this manner, but the first hunting trip with this rifle carried on horseback and used to climb mountains on sheep hunts will tell the story.—C. F. H.

Answer (by Colonel Whelen). I have not personally seen the new Noske hunting telescope sight or the mountings, but friends of mine in whom I have confidence have used them and have a very high opinion of them.

My own opinion, based on my experience, is that I want to be able to use the Lyman sights on my rifle in addition to the telescope sight. Taking it any way you look at it, a telescope is more or less of a delicate instrument, and in the rough and tumble of real hunting it is always liable to be injured. If one does not have Lyman sights which he can put on in that emergency, it may spoil his entire trip. It perhaps is not necessary that one shall be able to sight through the Lyman at the same time that he sights through the telescope; but I think that when the telescope has been removed, one should be able to put the Lyman No. 48 sight slide back into its base in proper adjustment for almost immediate use.

I am enclosing a memorandum which I send to many of my correspondents on telescope sights, and also circulars of the two most satisfactory telescope-sight mountings with which I have had experience. I think that the Zeiss Zielklein 2¼-power telescope is the best one now being made. The Hensoldt telescopes at present being imported into this country almost all contain bad parallax. This probably is only a temporary condition.

.32-20 BULLETS IN THE RUSSIAN RIFLE

I RECENTLY ordered two Russian rifles (one modified and one "as is") to complete my arsenal of D. C. M. guns, and as I like to use rifles for sport rather than as ornaments, I would very much appreciate any information as to what to expect of this type of arm.

I have on hand 500 bullets, .32-20, which work perfectly accurate in Krag with 45 grains of No. 17½, and fairly good in Springfield. Not being a dyed-in-the-wool gun crank, I have no micrometer; but these bullets seem to be a trifle larger than the .311 type. Would you recommend them for the 7.62?

I have just ordered a Perfection reloading set, which handles this cartridge, and I hope to use this gun on hawks and small varmints. Any information, however brief, will be welcome and will save me some experimenting.—R. L. E.

Answer (by Colonel Whelen). I think that those .32-20 bullets ought to work satisfactorily in the Russian rifle with the same charges exactly as you use in the Springfield rifle. A little depends upon the bore of the Russian rifle—whether it is too large or not—and also on the throat of the chamber; but usually you can get pretty fair results. Remember this, though: The Russian has a very crude rear sight, and you have to put a decent rear sight on it, or else the errors of aim will be so great that you can not get good results.

INTERESTING DOPE ON HUNTING SCOPES AND MOUNTS

I HAVE a very fine Model K .250-3,000 Savage, restocked by Clyde Baker, which I use for deer hunting; and I also carried it on my recent hunt in northern Quebec. I have a Hensoldt Zielyt 2¾X with Western mount on this rifle, and it makes a most excellent combination. That Western mount, with one alteration, is the best I've found yet. That alteration is a 6/32 set screw to lock the left-hand screw on the rear mount, which had a habit of turning when the gun was taken out of the case. This rifle can be taken down and the scope removed from the mounts without changing the point of impact at 150 yards, provided that check marks on the barrel and receiver are used, and the above-mentioned set screw is used on the mount. I made several 5-shot targets at this range, taking the gun apart and removing the scope between every shot to prove this to my own satisfaction. After my trip to Canada I put this outfit together and targeted again, and my group was within 1 inch of its original position before I left on the trip. This variation can be accounted for by change of light, temperature, shooting position, etc. The gun carried was taken down in a sheepskin case (the best kind of case, bar none) and yet had very rough use. It was usually at the bottom of the pile on speeders, canoes, etc., and yet was unhurt, and the scope adjustment remained O. K. It's a good outfit.

I am having another Model K made up in .300 caliber which will be an exact duplicate, as nearly as possible. The Savage outfit is doing the job entirely this time. I intend to have duplicate scope and mounts on this gun, also.

I note that every authority on hunting scopes strongly recommends the post reticule, or a variation of it. I've used everything, and find the medium cross hair in a hunting scope has got the post licked ten ways. In the first place, it is impossible to get a rifle accurately sighted at, say, 100 yards, when the post itself (flat top) covers at least 8 inches of bull's-eye. When I say accurately sighted I mean getting groups consistently inside 3 inches at this range. Furthermore, I find there is a lot of variation in the "vertical" using the post, which doesn't happen with the cross. To be brief, the cross is a much more definite aiming point than the post. And for target scopes there is no argument whatever. I also find that in very poor light, when an open sight is completely out of the question, the medium cross hair will show up just as black and is just as easy to see as any post, and I've used posts that were broad, medium, and fine (so fine, in fact, that they were made to order—not regularly stocked). However, all this applies only to me, and perhaps the next one prefers the post. I wouldn't consider it myself.—K. M. F.

Answer (by Colonel Whelen). I am very much obliged to you for giving me your experiences with the Western mounting and telescope sights. My own experiences are, of course, of necessity limited, and it is a great help to me in forming opinions, and in advising others, to have the experiences of other riflemen like yourself.

I quite agree with you that the medium cross hair is a much more accurate reticule than any of the post reticules, and yet, as you say, a great deal pertains to the man and the kind of shooting he is doing. For target-shooting, I would not have anything but cross hairs; but, personally, the cross hairs have proved absolutely unsatisafctory for me for any hunting except hunting like woodchuck-shooting where the game is out in a field or plain, well lighted, without a lot of shadows, trees, branches, or rocks around it. In the woods or mountains I personally find that cross hairs get confused with a lot of other lines or shadows in the field of view, and very often I have to look very close to see them at all. This makes the cross hairs entirely too slow for me for big-game shooting. The flat-top post reticule seems to be very much the best for me. With it on Springfield rifles, I can average 2-inch groups at 100 yards either on a bull's-eye target or on a target protectively colored like game. With a sharp-pointed post, my average is about 2¾ inches, while with fine cross hairs it is about 1½ to 1¾ inches. This in slow fire. My rapid-fire average with the flat-top post on protectively colored targets is far better than with either of the other reticules. But, as you say, this applies only to me.

NEW BARREL FOR KRAG

I AM CONSIDERING having a Krag Sporter rebarreled with a .30-caliber Springfield barrel chambered for pointed bullets. What barrel shall I order from the D. C. M. and what length will the barrel be after rechambering and fitting to receiver? (Present barrel is 26 inches.)

Will the Springfield Armory do the above work, or would you recommend one of the advertised gunsmiths?

Can I continue using the same full loads given in the du Pont and Mattern tables with this new barrel?—O. S.

Answer (by Colonel Whelen). To rebarrel a Krag, order a .30-caliber sporting type barrel without rear sight fixed base, polished, blued, and same size as .22-caliber barrel. Have this sent to the Niedner Rifle Corporation, Dowagiac, Mich. Send your rifle to them, and have them fit the barrel to your Krag receiver and rechamber for the Krag cartridge. The new barrel will be about 23¼ inches long, measuring from the breech of the barrel. This is the only way. Springfield Armory can not do this work.

Some of the maximum loads given by Mattern and du Pont are pretty heavy. Du Pont loads are based on using new cartridge cases. I should advise you not to exceed the loads given in the "Ideal Handbook." These will be perfectly safe.

REMOVING CYLINDER FROM COLT REVOLVER—SPECIAL GRIPS FOR AUTO.

COULD you tell me how to completely dismount the Colt revolver, having specific reference to the cylinder? In your book, "Pistols and Revolvers and their Use," you only give the method of dismounting the cylinder from the frame. I wish to know the manner of dismounting the ejector, etc.

Now, where could I get a special grip for my .45 auto., something like the illustration you have in your book mentioned above? How much would it cost me? I also notice on this pistol is engraved your name. How much, about, would this cost me, offhand?—G. A. S.

Answer (by Major Hatcher). To dismount the cylinder on the Colt revolver you first remove the crane lock screw and crane lock on the right side of the frame just below the cylinder. Then slide the crane forward, carrying the cylinder with it.

To remove the cylinder you press the ejector rod so as to move the ejector back clear of the cylinder. Then take hold of the ejector and unscrew it. You will find that the cylinder can now be lifted entirely clear of the crane.

If you wish to take the ejector rod and spring out of the crane, it will then be necessary to get a split screwdriver and unscrew the ejector spring collar, which is in the end of the cylinder support on the rear end of the crane.

The special grips for the .45 automatic pistol which you refer to are made by Benjamin S. Albertson, of Lewes, Del. Mr. Albertson calls these grips the "hand full grip." I believe that the price is $2.50; but I am not sure about this.

I do not know of any place where you can get a job of engraving done like the one on mine. This was done by a personal friend to demonstrate his skill.

REGARDING BINOCULARS

NATIONAL RIFLE ASSOCIATION,
Barr Building,
Washington, D. C.
Gentlemen:

IN ANSWER to inquiry of "G. M. D." in the March issue of the RIFLEMAN, subject, "Binoculars," as a member of the N. R. A. and a brother sportsman I feel it my indispensable duty to give you my slant on the binocular question. Your question was answered correctly by Colonel Whelen; but as I was up against the same problem last summer, I tried out several different glasses at local dealers, particularly the Busch and Zeiss, which range in price from $40 to $80, and at the same time I answered an ad of Du Maurier in regard to their line of glasses, and they recommended the 7010 glass to me, and sent me a pair on a five-day trial, satisfaction guaranteed or money refunded. I have a pair of their glasses now, and at the reasonable price advertised.

The first pair I received on trial I gave to my pal, Dusty Morby, of Blackfoot, and ordered another pair for myself. That was last fall, and we had them with us on our deer hunt; and I'll say I never got more enjoyment out of a trip in all my years of hunting. They were equally good at dusk and very good after dark for spotting our camp fire from the far mountain top.

They may not be as good as some others on the market, but I will say I wouldn't part with mine for $50 if I couldn't get another pair as good. They are also compact and easy to carry, and both pairs I purchased were entirely up to my expectations, and needs.

Brother G. M. D., if you will write Du Maurier Co., Department 16, Elmira, N. Y., for their No. 7010 binocular on five-day trial offer, guaranteed satisfaction or money refunded, I'll say to you that you will appreciate this tip.

Your N. R. A. brother,
GEO. M. WOOD,
Aberdeen, Idaho.

DO YOU WANT IT?

AMERICAN RIFLEMAN,
Washington, D. C.
Gentlemen:

I HAVE from time to time suggested to the Colt Patent Fire Arms Manufacturing Co. that they manufacture a .22 adapter for the .45 automatic pistol; said adapter to be of a type that would replace the present slide assembly of the .45 A. C. P. with a slide assembly that would permit using the .22 L. R. cartridge in the .45 A. C. P., with the same grip, hang, and trigger pull of the .45 auto., as issued. There are adapters of this caliber now on the market permitting subcaliber practice with the .45 A. C. P., but they are of the single-shot type only. I have felt that there would be a big demand for an adapter for this most excellent pistol that would permit shooting .22 L. R. cartridges in strings of at least 5 shots, so that the users could enter the N. R. A. and U. S. R. A. matches requiring timed- and rapid-fire scores.

In answer to my latest inquiry, regarding a .22 automatic pistol built on the .45-caliber Government model frame, Colt says: "If we thought that the demand among the shooters for this model would warrant the cost of putting it into production, we would most certainly go ahead and do so."

That leaves it up to the shooters. I, myself, have placed an order for the first one that comes off the proving range. If every other shooter of the .45 A. C. P. would do the same, or show their interest in such an adapter. I am sure that Colt would give us a gun that would permit us to enjoy real subcaliber practice with the .45 A. C. P. As it is, we have to lay the heavy gun aside when cold weather comes, and many of us can not become as expert with the .45 automatic as we might desire, due to the excessive cost of ammunition. Colt has given the lovers of the Officers' Model .38 revolver a subcaliber arm, and they seem willing to do the same thing for the ones that swear by the automatic.

I would like to suggest that you run a little paragraph in your magazine asking all those interested to write the Colt company and ask them to go ahead with either a .22 automatic on a .45 frame, or an adapter to go on the frame of the present .45 A. C. P. Personally, I would much prefer the latter, as it would give the shooter exactly the same trigger pull with .22-caliber ammunition as with the more costly .45's. As most shooters of the automatic have found, there are rarely two automatics with the same trigger pull. Having an adapter to go on the present gun would eliminate this little trouble, and it would probably be cheaper than what you might call a .22-45.

Your co-operation, as well as that of the shooters that read the article that you may print, will surely be appreciated.

Yours very truly,

E. M. HOSKINSON.

SOME LONG-RANGE WORK

I READ your article regarding long-range shotguns, some time ago, and was very much interested.

My purpose in writing in that connection is to tell you about an experience I had during the hunting season of 1928.

I found a grain field that some Canadian geese were using, and made a blind and waited until they came in; but they lit down the field quite a way. It was quite cold, freezing weather, with several inches of snow, and as I had been in the blind for more than an hour, I did not feel that it would be possible to lie still for a longer period on the chance that the geese would work in closer. I opened fire, using a 12-gauge 97 Winchester pump, and knocked down two geese out of six shots. The first shell was a mail-order load that I had had on hand for three or four years, 3½ drams powder and BB shot; the second shell was a Super X, with No. 2 shot. They were the shells that killed, the first shot killing with a head shot just as they spread their wings; the second shot breaking another goose's wing. After retrieving the geese, my partner and I decided to step the distance to my blind from where the first goose was knocked down, and I made it 168 steps, and my partner, William Wilson, living here, made it 169 steps. Now that is a long distance, even allowing that our steps were somewhat under a yard. We were wearing heavy arctics, and each carrying a gun and a goose; but we stepped good long strides.

I never patterned my gun at that range, but I don't suppose it would be possible to put more than one to three shot in a door at that distance; so the element of luck in hitting at all was large. The goose with the head shot also had one shot in the body that went into the body cavity, but I couldn't swear that it was from my gun, although it appeared to be a fresh shot, and the size of a BB. Believe it or not, anyhow I got the geese.—H. R. L.

Answer (by Captain Askins). I note about those geese. It was an interesting experiment, but my notion is that it won't happen again in your time. I once knew of two geese being cut out of a big flock at 250 yards, as they rose, with a Winchester .32 special rifle. That kind of thing doesn't happen very often, either. Anyhow, it shows that the shot had considerable remaining energy to kill a goose, even if he was struck just about right. I suppose it would be possible to kill a goose at 400 yards, with big buckshot, if you could land on him. I suppose, without having tried it, that at 400 yards the load of big buckshot would shoot into about a 100-foot circle, and that wouldn't make the pattern very dense, using twelve buckshot in the gun. Your pattern wasn't very dense either, and you had a lot of luck. At that your story is interesting, and I am glad you wrote to me about it.

THE .38-55 MODEL '92 WINCHESTER

I HAVE just purchased at a very low price a .38 W. C. F. Model 1892 Winchester of solid-frame type and with octagon barrel. I find that the bore is slightly pitted, but hardly enough to amount to anything.

Please give me some information concerning this model Winchester as compared with the more modern type rifles. Very few articles make any mention of this rifle or the .38 W. C. F. cartridge used in this rifle. Is it because the rifle is not popular or because the ammunition is not popular? More mention is made of .30-30's, .25-3,000's, .30-06's, etc. There must have been a time when the '92 with its .38 W. C. F. ammunition was plenty popular, judging from the looks of the heavy bullet with its soft-point nose. But maybe the charge of powder behind that slug did not give it sufficient wallop to deal an instant death blow. Is this ammunition accurate up to 300 yards, and does it have sufficient shocking power to kill deer at that range?

I have seen quite a number of articles on the .25-20's and .32-20's. May be that they are better than my '92 with its .38 W. C. F. Please give me your opinion.

Do you think my rifle could be bored out and adjusted to handle the .410 shotgun ammunition, and in such a way that it would make a satisfactory little repeating shotgun? What would be the cost of having it remodeled to handle the .410? Who would do this work for me?

Should I want to have the rifle rebarreled for either the .25-20 or the .32-20, could this be done without much cost to me, or would it be possible to work over and rebore my present barrel?

One more question and I will leave you alone for a while. Do you consider the Russian 7.62-mm., as sold through the D. C. M., with the two alterations made, a good buy at the price, which I believe is around $7.50, and is the rifle well made and safe to handle, from the shooter's standpoint, I mean?—C. W. J.

Answer (by Colonel Whelen). Tastes and fancies of men differ, but the fact remains that the vast majority of purchasers of rifles buy them to shoot deer; that our large companies make rifles to cater to the vast majority—that is, they make mostly deer rifles. They change the style of their deer rifles from time to time to cater to popular demand, but you will find that 90 per cent of the sales of large companies like Winchester, Remington, or Savage are deer rifles or light .22-caliber repeaters for boys. The other rifles hardly count.

The white-tail deer is a forest animal. In his typical country, due to thick woods, the average range is 50 yards—hardly ever over 100 yards. Now, under these conditions, the .38 W. C. F. Model 92 Winchester is as good a deer rifle as has ever been made. The bullet will kill a deer every time if well placed; no rifle will do better. It shoots accurately enough to enable a fine shot to place his bullet correctly on deer up to 100 yards, but no further. No better accuracy is necessary. It is the quickest to operate of all lever-action rifles, if a second shot is necessary. Its convenient hammer and trigger make it easy to cock the rifle quickly as it is thrown to the shoulder for a snap shot. One does this instinctively, and it is a great help to do a thing instinctively when a deer jumps in thick cover and throws one into excitement.

This is a splendid deer rifle; but it is not a good rifle for anything else. Suppose you were shooting at a woodchuck at 100 yards. Owing to the curved trajectory, your rifle must be sighted accurately for exactly 100 yards, or you will have no chance of hitting. Even then, you only have a 50-50 chance, because with perfect aim and perfect sight adjustment your rifle and ammunition will make about a 4½-inch group at that range, and you are just as liable to graze the woodchuck as to make a good central hit which will keep it from getting in its hole.

AN ALL-AROUND LOAD FOR THE .44 SPECIAL

I HAVE just purchased a New Service target revolver, caliber .44 Special, for which I wish to reload. Please advise me as to the most efficient load for target- and game-shooting. I want a heavy bullet—not necessarily a speedy one—for 50-yard target-shooting, and a smashing load for porkies and woodchucks. I do not want a round-nosed bullet, and do not like the perfect wad-cutters. I have never reloaded any revolver shells, but have had considerable experience with .30-06 and Krag.

Do you advise the use of No. 80 in this gun? I would be afraid to use it, as I prefer No. 5.

Is the .44 Russian an efficient case to use with smokeless powder? Is it as good as the .44 Special?

Would you advise me to use two differ-

ent loads, or can I combine one for both target- and game-shooting and for just pottering around?

Lastly, I do not want a super-load. I would like a fairly husky slug; but it must be safe. I use a scale even in reloading mid-range charges for my rifles, and expect to do the same for this gun; but I want to be well within the pressure tolerances of the chamber.

I understand revolver bullets are cast very hard and sized to groove diameter. Is this correct? I have used bullets (the squib gas check) cast 80 parts lead, 15 tin, and 5 antimony in my rifles, and they seemed to work fine. Would such a bullet work in the .44 Special?

I am absolutely green in the revolver reloading game, and any information relative to this cartridge you care to give me shall be most thankfully appreciated.—A. J. D.

Answer (by Major Hatcher). I believe that it would be better for you in reloading for the .44 Special to select one load and stick to it for both uses that you mention. The reason for this is that when you use bullets of different weights the gun groups in different places on the target. A heavy bullet will make the gun shoot high, and a light bullet will make it shoot low.

A very good compromise bullet for this gun is the B. & M. No. 429240, using 5.6 grains of du Pont No. 5 pistol powder. It is quite possible to use No. 80 in the .44 Special with safety, but No. 5 is the better powder for this cartridge.

The .44 Russian case is not so good for full loads, but is very good if you want to use very light short-range loads with a regular .44 Special bullet. Very small powder charges burn better in the small .44 Russian case than they do in the large .44 Special case.

Revolver bullets should be cast fairly hard and sized to groove diameter, or to one-thousandth of an inch above groove diameter. Eighty parts lead, 15 tin, and 5 antimony is a good deal harder than a bullet should be, however, for revolver use. It would be better to use 15 parts lead to 1 part tin. Bullets as hard as 10 parts lead to 1 part tin can be used, but harder than this are not advisable. It would be quite possible, however, to take your mixture of 80, 15, and 5 and add lead to it to make it O. K. for revolver use. I would add 120 parts of lead to this mixture, making it 200 lead, 15 tin, and 5 antimony.

I am inclosing a list showing all the tools necessary to make pistol and revolver cartridges.

THE .32-20 WINCHESTER

Two or three years ago you had a write-up on the Model 53 Winchester, .32-20 caliber. I can not find where that was and would like for you to say in addition whether you have tried the 2,000-foot load in this rifle. I have just acquired one with stainless-steel barrel but have not had an opportunity to try it fully, not having yet gotten a peep sight. Just tried a few shots of Remington Kleanbore 100-grain bullet.

Is there any possibility that the high-speed load could set the action as you say some of the modern loads have done in the larger rifles with this type of action?

Can I expect this rifle to group any better than the Savage Sporter of the same type? Let me say here that I got better groups from Winchester Staynless than from Remington Kleanbore in the Savage.

Tell me what sights you have on your Winchester.—W. K. C.

Answer (by Colonel Whelen). I have a .32-20 Winchester Model 53 rifle with which I have done quite a lot of shooting. It is equipped with a Lyman No. 3 gold bead front sight and a Lyman No. 103 rear tang sight. I regard these as by far the best and most practical sights for this rifle. When I shoot at targets, I blacken the front sight in the smoke of a burning candle and use the cup disk in the rear sight. Under these conditions, I probably have an aiming error of ½ inch at 50 yards or 1 inch at 100 yards, which would not be present with a target telescope sight, which, however, could not be readily used on this rifle due to its top ejection.

With the low-velocity smokeless ammunition, the rifle averages 1½-inch groups at 50 yards or 3¼ inches at 100 yards from muzzle and elbow rest, with high-velocity cartridges, 2 and 4½ inches, and with hi-speed cartridges, 2½ and 6 inches at 50 and 100 yards.

I think that the Winchester is the most accurate rifle in this caliber due to its superior material and workmanship. But you can put a Lyman 5A scope on the Savage, and it is possible that with such a scope a Savage might beat the Winchester and iron sights, due to the practical elimination of the error of aim.

REGARDING THREE-BARREL GUNS

Is it worth while to carry a rifle two weeks or a month for the sake of one shot at a deer? Most of our States allow only the one deer to a license. Would we not get more pleasure from a gun that afforded us frequent flying shots at partridge and duck? Such guns have been used by English sportsmen, and in this day of disappearing game and small bags, they ought to be far better for us here than the high-power modern rifle, from which we need fire only one shot a season to obtain a deer. In Maine we find partridge, duck, and deer in the same sections, as well as an occasional fur-bearer. Just now a double 12-gauge or 20-gauge with either .30-30 or .30-40 barrel underneath appeals to me. Why not mount a low-power wide-angle scope on top, and have a real gun?—S. C.

Answer (by Captain Askins). The three-barrel gun has an appeal, all right, though the gun is better in theory than it is in practice. I carried one for two or three years in a country where there was quail and deer, never getting a shot at a deer. The trouble as I found it was that immediately I started out hunting I found quail, ducks, or some other small game, and went to shooting. Immediately all the deer cleared out of that vicinity, and I never saw one within shooting range. It might not be the same in Maine; but if I went to Maine I would want the two guns—a woods rifle, automatic or pump action, and a light shotgun. If you are much of a small-game shooter, you will want to shoot the shotgun during many days, and the idea of carrying the extra weight of a rifle will finally disturb you. For example, a good 20-bore can be had in a weight of 6 pounds; but place a rifle barrel under it and the chances are the gun weighs 7¼ pounds. Mine weighed 7½ pounds, and the scope added another pound. Finally I got tired of that gun and sold it. You can not shoot small game flying with a scope sight on the gun. I tried that, too. Hence, you see, I'd rather have the two guns. I would then hunt deer until I got the one allowed, after which I'd take up the shotgun for the winged game.

You might possibly get along in Maine with a shotgun only, using such a bullet as the Reneke, which is designed to shoot point-on, and to be accurate up to about 75 yards. Many European hunters in the north of Europe, they tell me, are using these bullets in shotguns for moose and bear shooting; also for deer. If the deer are to be shot in heavy cover, at short range, I believe the shotgun with these bullets would work.

SOME POINTERS ON STOCK FIT IN SHOTGUNS

I have access to two shotguns—a cheap single and a field grade Ithaca. The single-barrel doesn't have as much drop at heel as the double. The double has a drop at heel of about 3 inches. I seem to have better luck on flying birds with the single than I have with the double. Would like to have a few hints on how to improve my wing-shooting with the double gun.—R. O. H.

Answer (by Captain Askins). In wing-shooting, in my opinion, the gun should shoot high for all shots that have to be taken quickly. The tendency, then, is to pull under, and you will shoot under, notwithstanding the gun looks right when you sight over it. I get my guns so that in shooting at 40 yards, I am nearly at the bottom of the circle instead of at the center of it. I find that when the gun shoots that much high, I center a flying bird. It is just no use for me to shoot a gun at a stationary target, and accept the one that shoots to center at a still mark, because that gun will undershoot even when I think that I have held plenty high enough. I take it you are probably in the same fix. For that reason you can not do anything with that 3-inch drop to the stock, and probably never will be able to do good shooting with it. Most of my guns are stocked with a 2½-inch drop, but the last few years I find myself shooting better with a 2-inch drop by 1½ inches at comb. That might be too straight for you, but I am pretty certain you can shoot a gun with a 2½-inch drop better than you can with a 3-inch, and then have the gun, if possible, a little muzzle light, and you won't miss those birds that have to be snapped.

I do not know what you can do with the stock you have unless you have it straightened. The Ithaca Gun Co. might do that, though no doubt they would prefer to make you a new stock to order. If you have a radical change made in the stock, then learn to shoot the left barrel first, and you will be far less likely to pull off under the bird. In pulling the right trigger there is a certain amount of strain put on the finger to reach the front trigger, and that causes you to let the barrel off just before you are ready.

GET THE .38 SPECIAL

I am intending to buy a Smith & Wesson target revolver and would like to have your advice as to which of the two calibers to get, the .38 Special or the .44 Special. I want to load my own cartridges. In the November Rifleman I read an article by "W. C. D." stating he had quite a bit of trouble with his .44 S. & W. leading. Do you think the .44 would be any more liable to lead than the .38 Special? I want this gun for target work.—W. I. N.

Answer (by Major Hatcher). I would by all means advise that you get your Smith & Wesson target revolver in .38 caliber. The .38 Special is the most accurate revolver cartridge made and is much more pleasant to shoot than the .44. Moreover, it is the gun for which handloading is most commonly done and has the greatest

variety of loads and information available. You will have less trouble in leading with the .38 than with the .44.

ALEXANDER JOHN FORSYTH COMES INTO HIS OWN

(Continued from page 12)

nition of his achievements in science," and the people of his parish—the third generation that had sat under father and son—presented him with a magnificent silver service "in appreciation of his more than fifty years as their minister."

A few months more, and the veteran of science and faith had left alike pulpit and laboratory forever. Then a strange thing happened; hardly to be believed but for its official record. Awakened to a realization of their niggardliness toward him when living, the Master-General of Ordnance and the Board of the Treasury announced that "their former remuneration was inadequate," and proclaimed a further gift of $5,000 to be distributed among Forsyth's surviving relatives. The treasury checks passed in the course of this award are still preserved among their descendants.

It should be pointed out that Forsyth did not invent the percussion cap proper, as is invariably erroneously asserted. That device was the happy thought of a British-born American artist, sportsman, and inventor of Philadelphia, one Joshua Shaw, who in 1814 produced the soon universal nipple and cap, the latter first of iron, then of pewter, and in 1816 of copper. Refused a patent on the ground of not being as yet a citizen, the simplicity and convenience of his device swiftly brought it into universal adoption. In later years Congress officially recognized his claims and did the amazing thing of voting him $20,000 in token of such recognition. The cap almost immediately annihilated the loose detonating-powder method of ignition, and existing guns were everywhere altered to its use, which accounts for the fact that original and unaltered Forsyth arms are the rarest prize of the collector today.

With his interment in an honored grave beside kirk and manse and sounding sea, Forsyth's name all but passed from human ken. Others claimed his invention, historians recorded him vaguely as "a blacksmith" or as "abandoning his profession to float a company," for the gun firm he founded in London long survived him. The writer, for many years a student of the Forsyth story and a collector of its scant literature, having traveled thousands of miles in its pursuit and visited the scenes of his life and work, remembers a day when the British Museum contained nothing about him, and the authorities of the Tower of London admitted that they had never heard of him.

And today, as we have described, his name stands high among the great, not of Britain only, but of that noble honor roll of those to whom the world is debtor for their patient pursuit of the details of human progress which, under the guidance of that God in whom he trusted, have created the marvels of the civilization of the twentieth century.

Alexander John Forsyth has come into his own!

RECOIL IN REVOLVERS AND PISTOLS

(Continued from page 20)

ing the velocity of recoil when the first cartridge is fired, would be approximately .16 of a pound. In other words, the factors noted in this paper would be slightly greater with the chambers empty than when they were fully charged.

In conclusion, the entire aim of this paper may be well summed up in a paragraph from a letter by Dr. Ray Bracken, of Columbus, Ohio, to whom the author submitted the paper in manuscript form: "From my brief experience I agree with you fully in respect to the effect of recoil in revolvers. Some twenty years ago when I first started to shoot the handgun Capt. W. A. Morrell would tell me, 'Remember, the bullet does not wait around in the barrel to see what the recoil is going to do.' Recoil may change a man's score for better or worse, but it affects his mind, not the physical relation of the gun to the target."

The author wishes to express his appreciation of the assistance afforded him in these experiments by Messrs. C. T. Ervin and M. F. Mathews, of the Physical Laboratory of the Peters Cartridge Co.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of THE AMERICAN RIFLEMAN, published monthly at Washington, D. C., for April 1, 1930.

City of Washington, District of Columbia, ss.:

Before me, a Notary Public, in and for the District aforesaid, personally appeared Laurence J. Hathaway (who, having been duly sworn according to law, deposes and says that he is the editor of THE AMERICAN RIFLEMAN, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, National Rifle Association of America, Washington, D. C.

Editor, Laurence J. Hathaway, 816 Barr Bldg., Washington, D. C.

Managing Editor, C. B. Lister, 812 Barr Bldg., Washington, D. C.

Business Managers, Executive Committee, National Rifle Association of America.

2. That the owner is: National Rifle Association of America, Washington, D. C.

No stockholders.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is— (This information is required from daily publications only.)

LAURENCE J. HATHAWAY, *Editor.*

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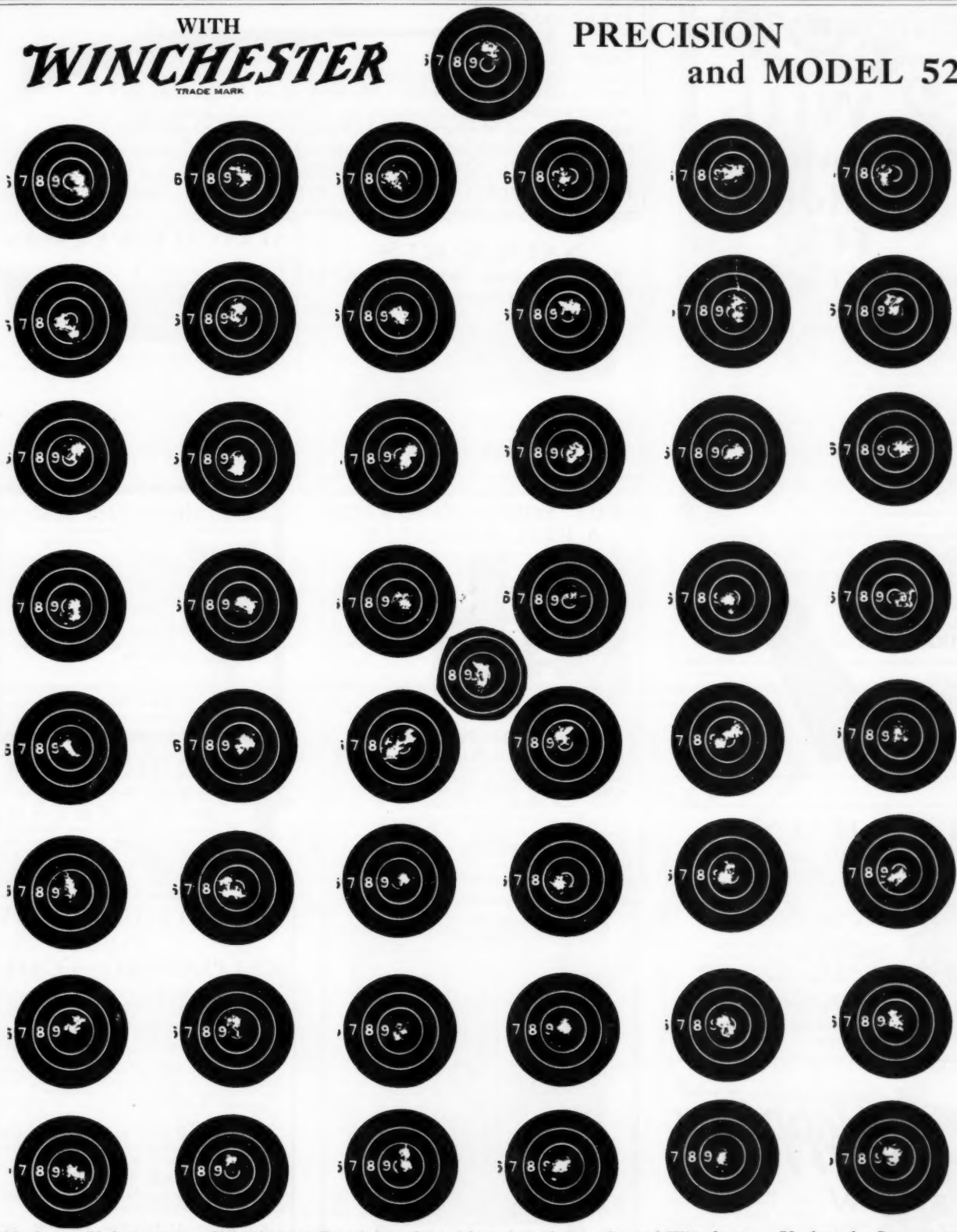

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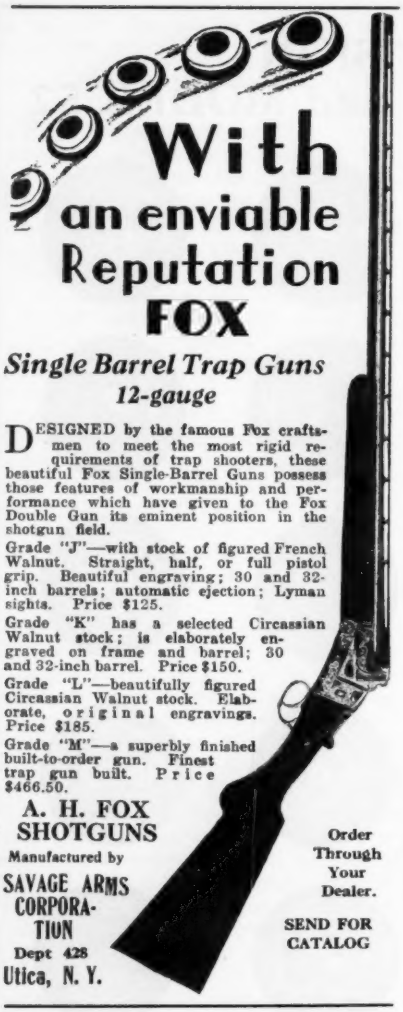

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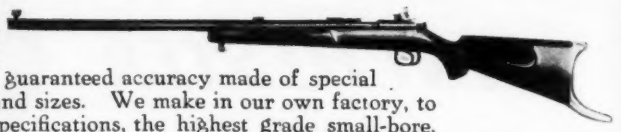

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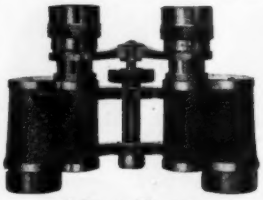

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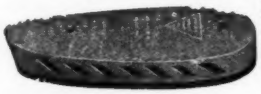

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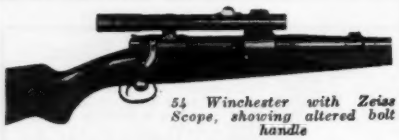

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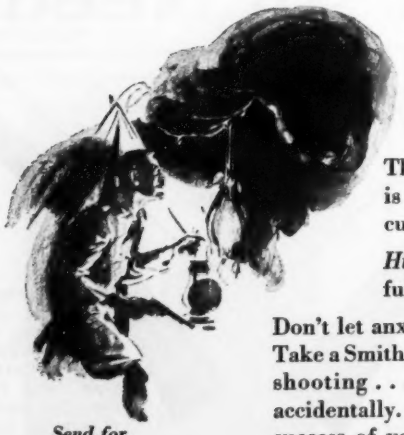

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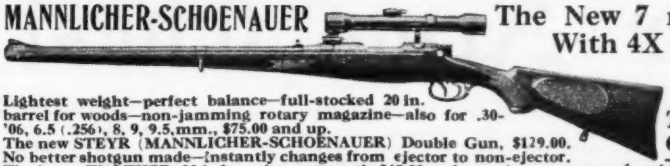

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MUST SACRIFICE .25 Niedner-Springfield, B. & M. bullet seater, 45 empties, 20 unfired barrel perfect, action good, stock service, $30. Rollin Shaw, Sequin, Wash. 6-30

ANTIQUE firearms, edged weapons, powder horns. Collectors' list free. Stephen Van Rensselaer, Peterboro, N. H. 7-30

NOSKE 3X field scope with mounts, perfect, used only few times, $35, cost $53. C. A. Swiggett, Iola, Kans. 6-30

CASHMORE Improved Nitro ejector, 12-gauge, English handmade trap gun, Whitworth barrels, highest quality, as new. J. S. Ovington, Marion, Iowa. 6-30

.22 L. R. BOLT ACTION TARGET RIFLE, Lyman 48, ¾-inch groups at 50 yards, like new; .25-20 Winchester, lever action, fine condition; 52 Winchester, perfect. Dr. Wright, Seymour, Ind. 6-30

BUTT-LOG walnut gun-stock blanks, $1 up, any thickness. Stamp brings price list. Whole planks half price of list. John Parkhill, Rochester, Minn. 6-30

FINE COLLECTION of rifles, including Colt revolving rifle, Henrys, Ballards, Sharps, Evans, Winchester single shots, and many others. Ammunition and tools for above. Description and price of any gun for stamp. A complete list for a dime. Charles H. Lawrence, Box 126, Centralia, Wash. 6-30

PACIFIC BALLARD .22 L. R., new, No. 3, 28-inch barrel, factory refinished action, like new, $60; .25 Roberts barrel, fits Springfield action, 25-inch, 4 pounds, nearly new, $26; Pacific Ballard stock by Jas. Howe, English walnut, cheek piece, pistol grip, shotgun butt, $15. No trades. J. R. Buhmiller, Eureka, Mont. 6-30

WINCHESTER rifle, Pope M. L. barrel, also two extra barrels; .45-70 Winchester 1886 repeating model; .22 Maynard rifle telescope with mount. Send for list. Bargains. Wm. L. Puffer, 163 North Main, Brockton, Mass. 6-30

.45 AUTO. SHELLS, $2.50 per hundred; Browning auto. 12-gauge, full-choke, new condition, $42; 7.62-mm. Russian, restocked, high comb, full pistol-grip forearm, grip, checked, Lyman 56 swinging type rear, No. 26 band gold bead front, action remodeled, light cocking piece, spoon-type bolt, 140 shells, $40; Bisley model, fitted with single-action, grips, shooting .45-caliber auto. shell, 7½-inch barrel, fixed bead sights, light fast hammer, machined flat top, one cock notch, light pull, factory job, perfect, a fine target gun, $35; few No. 2½ Winchester improved primers, $1.50 per thousand. Carl A. Barstow, Anoka, Minn. 6-30

.250 SAVAGE 99G, fancy oil-finished stock, Lyman peep, leaf, gold front, other extras, fine, $35. Gordon Blake, Oakland, R. I. 6-30

ONE absolutely new Colt Super .38-caliber, auto. pistol and one Heiser holster for same, $30. Sent C. O. D. on receipt of $5. H. E. McEuen, Coeur d'Alene, Idaho. 6-30

ONE KRAG, as issued; one Model 71/84 Mauser, caliber .43; three Winchester single-shot rifles. Other obsolete guns and sporting goods. W. Joseph O'Connor, 1517 1st St., Baker, Oreg. 6-30

S. & W. .44 SPECIAL, 6½-inch, equal to new, $20 with holster; fancy Winchester 57, brand new, finely checkered sling, 5A blocks, $20. J. E. Wellington, Box 223, Wellsville, Ohio. 6-30

REMINGTON .30 Express, .30 Remington, Lyman 48, case, $45. Winchester, 55 Model, .30-30, $32. Fox Sterlingworth 12, 28 ejector, $40. Brand-new guns. Wm. M. Clarke, 355 88th St., Brooklyn, N. Y. 6-30

OPTICAL AIRPLANE machine-gun sights, Air Service surplus, new in original cases, 5 ground lenses, size 2 x 24, cost over $50, $4 postpaid, money order, or cash. Western Salvage Co., 648 Market, San Diego, Calif.

NIEDNER-BALLARD, engraved, 28-inch barrel, .22-caliber, 16 pounds, $100; Peterson-Ballard, plain, 23-inch barrel, 22-caliber, 12 pounds, $45; 8X Fecker, 1⅛ objective, extra eyepiece, fine cross hair, $50; 5A Fecker lenses, fine cross hair, $30. S. J. Lanning, 2015 W. Horn, Sioux City, Iowa. 6-30

SMITH & WESSON top-break, .38-caliber, 3½-inch blued, pearl handles, perfect, $14.75; S. & W., Schofield Model, .45-caliber, good condition, single action, $18. Hudson, 52 Warren St., New York, N. Y. 6-30

.38-55 STEVENS SCHUETZEN, 30-inch, mould, false muzzle, set triggers, perfect inside, $20; Winchester 30-inch nickel-steel heavy Springfield barrel, scope blocks, new, $35. Restocking, repairing, general machine shop work. J. I. Davis, Gunsmith, 1032 Penn Ave., Wilkinsburg, Pa. 6-30

WINCHESTER 95 .303 British, 1,500 cartridges. Remington .22 auto. No trades. Stamps appreciated. Carlton Burnett, Box 885, Corpus Christi, Tex. 6-30

HENSOLDT ZIELYT 2¾X pointed post, used one month. Perfect condition. Cost $38, sell $26. H. A. Wheeler, Berlin, N. H. 6-30

COLT 1928 NEW SERVICE .45 blue finish, 5½-inch barrel, never fired, good finish, $25, with oil-treated leather holster; 1928 Colt .380 automatic, blue finish, fired 10 times, good condition, $12.50. J. Don, 5656 Waterman Ave., St. Louis, Mo. 6-30

.30-06 SPRINGFIELD Service rifle, perfect, $19.50; 350 cartridges, $10. Ed. Angle, Anniston, Ala. 6-30

.38 SUPER COLT, perfect. Heiser shoulder holster, $30; cash only. Henry Stebbins, 10 Buffalo St., Oakland Sta., Pittsburgh, Pa. 6-30

GUNS AND RIFLES—Stevens 12-gauge highest de luxe grade, repeating trap gun, costing $125, same practically new and in perfect condition, a special gun, and made to order; also one Winchester repeating rifle, caliber .25-20, a special made-to-order rifle, with 28-inch barrel, costing $75, with extras, and in perfect condition. Prices and full description of both above arms on request. John H. Bullis, Jr., Bangall, N. Y. 6-30

COLT repeating rifle, .44 caliber, perfect condition, $22; Savage, Model 45, bolt-action .30-06, new, $32; Remington, Model 12A, .22-caliber, like new, $14.50; Stevens, Model 75, repeater, .22-caliber, like new, $12; Savage Sporter, .32-20 caliber, like new, $15. Hudson, 52 Warren St., New York, N. Y. 6-30

.32 COLT auto., excellent inside, almost perfect outside, Audley holster, 50 Kleanbore, all $15. Malcolm Lewis, Box 1429, Raleigh, N. C. 6-30

IDEAL RELOADING TOOL No. 4, with mould for .45 Colt, fine, with 50 empty shells, $6; Colt S. A. .45, fair, shoots good, holster and 50 shells, $9; .303 Ross, good, with 40 shells, $5.50. Elmer Iverson, Grinnell, Iowa. 6-30

WESTLEY-RICHARDS elephant rifle, .577 nitro express, with leather trunk case, price $150; Westley-Richards big-game rifle, .425 Magnum Mauser action, 28-inch barrel, beautifully stocked, very accurate, 120 cartridges for same, $175; Colt Camp Perry Model, .22-caliber pistol, new condition, price $30; Special Smith & Wesson .25 R. F. single-shot target, 8-inch barrel, holster, price, $18. Maj. John W. Hession, 10 East 40th St., Room 3610, New York, N. Y. 6-30

NEW 1894 WINCHESTER loading tools: .30-40 .303 Savage, .32-40, .38-56, .45-90, $3.25 each; Winchester .38-55-217 mould, $1.25; New Ideal 375248 mould, $2.50; New Ideal No. 6, .38-55-255 tool and mould, $4.50; New Ideal .32 Winchester Special full-length die, $2. All prepaid. J. V. K. Wagar, Woodland Park, Colo. 6-30

.38 SUPER COLT auto., 2 extra clips, $26.50; .22-32 S. & W. target revolver, $22.50; .22 S. & W. Olympic 10-inch target pistol, $25. All new or new condition. Might trade for .45 Colt. Dr. Kent, Box 103, Tucson, Ariz. 6-30

REISING .22 long-rifle automatic target pistol, 12-shot, good, holster, Lubaloy cartridges, $30. Frayseth's Hardware, Milan, Minn. 6-30

EXTRA CYLINDER for using .45 automatic ammunition in .455 S. & W., $3.50; barrel for S. & W. .45 Army, $2.50. Ray Welker, 406 N. Harvey, Oak Park, Ill. 6-30

.32-20 SMITH & WESSON Military, cartridges, holster, $25; .45 Colt automatic, extra magazine, cartridges, holster, $25; .22 revolver, $5; .32 Iver Johnson revolver, $7.50; .45-90 Winchester repeater, box cartridges, $25; Winchester 12-gauge automatic shotgun, full choke, $40; 8-gauge Davenport, 36-inch, extra heavy, like new, box shells, $25; 10-gauge, Charles Daly double-barrel shotguns, $150 to $350. Send money orders or send 10 cents for firearms list. Frayseth's Hardware, Milan, Minn. 6-30

REMINGTON 12-gauge auto., 28-inch F. C., raised solid rib, latest model, varnish scratched on stock, otherwise as new with $15 case, both $50; 300 clips for Model 1917, caliber .45 revolvers, 3 cents each. Bond double-cavity No. A257841 mould, $2. C. R. Stuedeman, 1825 N. 2nd St., Clinton, Iowa. 6-30

WINCHESTER 12, 12-gauge full, fine, used condition, $32.50; canvas case included. Roy Murphy, Woodburn, Ind. 6-30

INDIAN RELICS, beadwork, guns, coins. Catalogue free. Vernon Lemley, Osborne, Kans. 11-30

WINCHESTER automatic shotgun, 12-gauge, full-choke, field grade, first-class condition, haven't shot 50 shells in it, first offer $50 takes it. S. E. Heap, Box 203, East Northport, N. Y. 6-30

OVER-AND-UNDER TRAP GUNS—Double-barrel, three-barrel, individual shotguns. Catalogue free. Abesser & Merkel, Gunmakers, Suhl 66, Germany. 7-30

.45 COLT AUTO., Heiser holster, extra barrel, fine, $25; star-gauged Springfield, as issued, perfect, $25; Stevens Favorite, .22-caliber, like new, $8; prewar Mauser automatic pistol, $15. No trades. Robert Brodhead, Strafford, Pa. 6-30

.250-3,000 LEVER-ACTION SAVAGE, Lyman tang sight, oil-finished stock, sling swivels, perfect inside and out, $20. Paul Estey, Brattleboro, Vt. 6-30

STEVENS 44½ .32-40, engraved action, loop guard with spur, Stevens-Pope extra heavy barrel, palm rest, telescope and case, $25.—Haenel .177 repeating air pistol, $12.50.—Belding & Mull reloading outfit, .45-caliber, with mould and bullet-seater, $8.—Krag-Niedner, .25-caliber, single-shot, barrel and stock both by Niedner, $25. Chester Nikodym, 5703 Broadway, Cleveland, Ohio. 6-30

8-MM. GERMAN light Maxim machine gun, excellent firing order, with belt, ammunition, and belt-filling machine, $125; 1/6 horsepower 110-volt motor, $5; six cartons Winchester .22 short, $1 per carton of 500; DWM .30 Luger, genuine prewar, not captured, excellent, $25; 800 USCCO .30-06 cases, primed, $1.25 per 100; 17-piece Dietzgen drawing set, never used, $20, cost $35. E. M. Hoskinson, 1915 South 23rd, Lincoln, Nebr. 6-30

FINE RIFLE SCOPES—We offer twelve 3-power Voightlander and other high-grade rifle scopes, slightly used, like new, $19.50 each—about half usual price. We are still selling the .22-caliber auxiliary barrel for the Colt .45 automatic at $7 each. Baker & Kimball, 37 South St., Boston, Mass. 6-30

SMITH & WESSON .32-20 M. & P., regulation 6-inch barrel, pearl grips, extra wooden ones, Heiser quick-draw holster, belt, set of Winchester reloading tools, A1 condition, $40. Ralph Wingert, Paola, Kans. 6-30

LYMAN 5A scope, new Springfield mounts and bases, $30. William Vandervoort, 191 Hanover, Battle Creek, Mich. 6-30

NIMROD GUN BLUE acts by chemical action alone without the use of heat or tanks, $1.—Circassian-walnut stock blanks for Krag, Russian, Springfield, etc., sporter length, $2.75, $3.50, $5, and $10; Mannlicher length, $5 and $10.—Set of 60 twist drills, gauges 1 to 60, $3.50.—Miller checking tool with three bits cutting fine, medium, and coarse checks, $3.50.—Kettle-boiled linseed oil, $1.—Collars for Krag rifles at receiver, blue, $1.—Steel butt plate with trap, engraved and checked, $5.—Ramp front sight with guard and button release, $5.50.—Horn fore-end tips, $2.—Horn pistol-grip caps, 75 cents.—Horn butt plates, $1. Send stamp for complete list. Chester Nikodym, 5703 Broadway, Cleveland, Ohio. 6-30

.32-20 BISLEY COLTS, pearl grips, 2 barrels, 7½, 4¾, like new, with loading tool, $50. M. Fenton, Box 179, Hamilton, Ill. 6-30

FINE 12 Remington auto., $28.50; new .38-40 Marlin carbine, $16.50; fine S. & W. .22-32, $19.50; fine Winchester 12-gauge auto., 26-inch full, $35. Fred W. Jay, 457 Fillmore, Gary, Ind. 6-30

NEW COLT Official Police .38 special, 6-inch blue $25; Winchester, Model 92, rifle, caliber .44, round barrel, full magazine, inside perfect, outside fine, $18. Bargain. Arthur Woodman, 24 Stone, South Brewer, Me. 6-30

MODERNIZE your Krag, Springfield, or Russian trigger pull for $2. Selected walnut pistol grip, shaped to fit, with complete instructions for mounting. Satisfaction guaranteed. Eberhardt-Denver Co., 1408 West Colfax Ave., Denver, Colo. 6-30

KENTUCKY RIFLE, made by Lehman, Lancaster, Pa., .34 caliber, 32-inch barrel, weight 14 pounds, set triggers, brass semi-Swiss butt plate and trigger guard, half-stocked forearm curly maple, cheek piece, shooting condition, in fair shape over all; make offer. WANT—Dillin's "Kentucky Rifle" and Clyde Baker's "Modern Gunsmithing." Ralph Wingert, Paola, Kans. 6-30

SMITH Ideal Ejector, 20-gauge, 26-inch, right 50 per cent, left 70 per cent perfect, $50; Savage .22, Model 19 N. R. A., $15; Colt Officers' Model, 6-inch, with holster, $25; Colt Woodsman auto., perfect, $22.50; Remington .22, Model 12C, splendid, $15. H. S. Jackson, Box 233, Franklin, Ky. 6-30

REMINGTON 20-gauge, Model 17, modified, in new condition, with spare improved cylinder barrel, both 26-inch. Will sell improved cylinder barrel separately. Sell S. & W., Model 17, in factory condition, to N. R. A. member at cost to me. Dunlap Roddey, Rock Hill, S. C. 6-30

MANNLICHER-SCHOENAUER 6.5-mm., takedown model, peep sight in tang, factory new, condition perfect, leather case, cost $110, sell $65. No trades. E. E. Bement, 1026 Ellis St., San Francisco, Calif. 6-30

USED S. A. COLTS and obsolete arms: write wants or send stamps for list. Earl R. Gilbert, 4021 Mendell, Houston, Tex. 6-30

NEW BROWNING 12, matted rib, $50, cost $82; Ross .303 Sporter, $10; Krag, $5; beautiful hand-stocked Krag, $36; photo, 10 cents; prewar .30 Luger, $15; new Webley .22 air pistol, $10; Hartford .22 automatic pistol, new, $19; Felag 8X binoculars, $14, cost $30; Graflex revolving back B. & L. F. 4.5 Tessar, factory overhauled, bargain, $75. WANT—June, 1928, RIFLEMAN. Phil Sharpe, Fessenden Street, Portland, Me. 6-30

IN BRAND-NEW CONDITION, Colt .45 New Service, target sights, 7½-inch barrel, Heiser holster, $36.50; Colt .45 New Service, 6-inch barrel, Heiser holster, $26; Colt Officers' Model .38 Special, 7½-inch barrel, target sights, Heiser holster, $32.50; S. & W. .38 M. & P., 6-inch square butt, $23.50; Zeiss, Delactis, 8 x 40 binoculars, $60; M1, .22-caliber Springfield, Griffin & Howe stock; and Winchester 52, with Lyman No. 48 rear sight, for best offers; remittances on above payable to Mrs. Laura Nagle. Also S. & W. M. & P. 6-inch barrel, .38 long Colt, round butt, like new, $17.50; Colt .45 S. A., 5½-barrel, good, $16.50; 1,000 rounds .38 long Colt cartridges, Remington and F. A., 2 cents each; U. S. A. cotton blouses, size 40, new, 75 cents each. No trades. C. R. Jeffries, 137 Nevin St., Lancaster, Pa. 6-30

30X SPOTTING TELESCOPES, will spot .22 hole at 200 yards, $15.—.22-caliber bullet-holt gauges, 25 cents.—International butt plates, in rough, $1.25—finished and polished, $2.25—adjustable model, $5.—International palm rests, $8.50.—Hubertus .177 air pistols, new, $7.50.—Chester Nikodym, 5703 Broadway, Cleveland, Ohio. 6-30

WINCHESTER 54 restocked by Niedner, Lyman 48 sight, bolt-handle turned down, safety altered for Western scope mounts, rear mount included, gun-crank shape inside and out, bargain at $75. Emory R. Willson, Staunton, Va. 6-30

.410 SIX-SHOOTER, .410 double hammerless, 6-inch, .32 Colt target Police Positive; 50-caliber Remington Army; 41 Double Derringer, pearl handles; .32 Remington magazine pistol; .22 Stevens pocket rifle; Crosman pneumatic rifle; 70 other guns, etc. List for stamp. WANT—Good double hammerless with broken stock. A. W. English, Portage, Wis. 6-30

WINCHESTER 52, stainless steel, stocked special prone, by Griffin & Howe, Fecker 8X 1¼ objective, perfect, guarantee 1-inch groups 100 yards, machine rest with Palma match, cost over $200, photo on request; Savage, Model K, .250-3,000, stocked by Baker, cheek piece, pad, etc., Hensoldt-Zielyt 2¾X with Western mount, perfect, extremely accurate, cost over $200. Photo on request. Karl Foster, Great Barrington, Mass. 6-30

CLOSING OUT SURPLUS CARTRIDGES—.30-06-110, .280 Ross, .50-110-300, .45-90-300, .405, all S. P. 90 cents box; .30-03-220 (not .30-06), .30 Remington auto., 165 Western Lubaloy or 110 high-speed, .401 S. L., 32 S. L., .25 Remington, .41 Colt, .25-35 Express and high-speed, 65 cents box; 25-36 Marlin, .38-56, .38-72, .40-72, .40-65, .22 W. C. F., also following black: .43 Spanish, .40-60, .40-65, .40-70, .45-90, .32-40, paper-patch, 50 cents per box; .30 long R. F., .38 short, long, R. F., 30 cents per box; minimum order 300; .405 Winchester, solid frame shotgun butt, good, 400 factory cartridges, case, $40; 1886 Winchester .38-56 barrel, pitted, action good, 100 smokeless cartridges, $8.50; Winchester 1866, .44 flat, fair, rare, 350 cartridges, $27.50; Busch 24-power Terlux binocular, finest spotting glass, $70; Colt Frontier 5½, .44 S. & W. with extra ivory grips, .44-40 cylinder, Heiser hand-carved belt, holster, Bond powder measure, Ideal tool, mould, ladle, pot, cost $90, as new; make cash offer. Can use perfect No. 3 or over Winchester .25-35 barrel, nickel-steel, heavy frame .38 R. F. revolvers, .38 R. F. target rifles, heavy Winchester S. S. rifles, .25-35, .30-40, perfect condition. James W. Varner, P. O. Box 281, Scranton, Pa. 6-30

.30 SPRINGFIELD with new National Match barrel and receiver, 1922 stock with pistol grip remade, $35; .32 Remington, trombone action, gold bead and King peep, excellent inside, bluing worn, $25. W. T. Day, Y. M. C. A., Great Falls, Mont. 6-30

SAVAGE .250, Model 1899 takedown, gold bead front, Marble peep and folding leaf sight, also 3 Marble auxiliary chambers for this gun using .25 auto., absolutely perfect condition inside and out, fine bargain, first money order for $25 takes all. J. H. Atkins, Jr., Greensboro, N. C. 6-30

QUACKENBUSH air rifle, peep and glove sights, 500 slugs. R. D. Campbell, 7 Orchard St., Easthampton, Mass. 6-30

NEW GOODS—Three new Model Winchester 52 Semi-beaver-tail forearm, speed action, bargain, $47.50; first money order takes them. Ralph's Sporting Goods, Lima, Ohio. 6-30

ONE .30-06 heavy-pressure barrel Springfield, perfect condition, $55. WANT—Model 91 S. & W., 10-inch pistol, regardless of condition; what have you? Lawrence Nuesslein, 2111 Highland St., Allentown, Pa. 6-30

RIFLES AND SHOTGUNS, any American make at 10 per cent off list price. Shipped prepaid if money accompanies order; otherwise $5 with order, balance C. O. D. State caliber. Lawrence Lynch, Union City, Ind. 6-30

.250-3,000 SAVAGE, Model 99G, perfect inside, outside shows a little wear, accurate, $32. Dr. R. O. Buck, Wauseon, Ohio. 6-30

COLT super .38 automatic in factory grease, $30. Never fired. Geo. A. Hausner, c/o Newark Shoe Store, Ithaca, N. Y. 6-30

POPE powder measure, pumps, dies, .32 and other Pope moulds; Schuetzen butt plates, Schoyen palm rests; 52 Stevens-Pope single-set action, $10; Remington 12 auto., as new, $40; Zischang powder measures; Zischang-Ballard stock; one small-bore, one .32 Schuetzen Ballard rifle; few fine spare barrels .32 and .38. Practically my entire collection this type articles. Complete descriptive list ready; better write for it; stamp appreciated. Claude Roderick, 410 South Eddy, Fort Scott, Kans. 6-30

SELL OR TRADE

WEBLEY .455, 6-inch barrel, perfect condition; Colt .36 and .44 cap-and-ball, reblued, fine condition. WANT—Perfect .45 S. & W. 17 and .38 Super. Advertiser, 3237 42nd Ave. S., Minneapolis, Minn. 6-30

S. & W. .22-32, PERFECT, $20; Fairbanks 3054 scale, new, $15. WANT—5A; or what? J. Floam, 11 S. Exeter St., Baltimore, Md. 6-30

COLT OFFICERS' MODEL .38, 7½-inch, absolutely perfect inside and outside, with 200 cartridges, $30; S. & W. 1917 in A1 condition, $16. WANT—Heavy Winchester S. S. center-fire, flat mainspring actions or complete rifles, any condition, any caliber, reasonable price. W. H. Janssen, Mokomis, Ill. 6-30

REMINGTON .22 Special, 9-shot, Lyman peep, ivory front, perfect. WANT—Springfield .22 M1, perfect condition. H. Metzger, 135 W. 3rd, Reno, Nev. 6-30

CLARINET, buffet B flat, Boehm system, high pitch, 21 keys, 7 rings, perfect, cost new, $185. Will consider trade on any of following in perfect condition: Luger, 8-inch barrel, Bisley Colt, 7½-inch, Winchester 52, Springfield Sporter, Colt O. M. T 7½. Wm. M. Locke, 1329 S. 36th St., Omaha, Nebr. 6-30

"LA SALLE AMERICAN LAW PROCEDURE" and Alexander Hamilton "Modern Business Course," complete, make offer. Frank Johnson, 3626 Michigan, Kansas City, Mo. 6-30

WANT—.45 S. A. Colt, serviceable, $5; or Colt Woodsman, new condition; have .45 D. A. Colt, good, $12.50; .22 Marlin pump, fair, $10; .32 Ortgies auto., good, $12. O. H. Schwanger, Middletown, Pa. 6-30

LUGER, special target model, 8½-inch barrel, factory condition, bargain at $35. Will consider trade on New Colt O. M. T., 7½-inch. Wm. M. Locke, 1329 S. 36th St., Omaha, Nebr. 6-30

.30-06 WINCHESTER Sneiper, new, cost $123, for Model 1903, style T, rifle, in new condition, or any .30-06 target rifle, of equal value in new condition, or $80 cash. Frank Schwarz, 634 Prospect Ave. S. W., Canton, Ohio. 6-30

MENTOR REFLEX CAMERA—Film pack, leather case, three plate holders, Zeiss lens, hardly used, $135, new. Will sell or exchange for folding boat, hunting rifle, telescope. Wessel, 10 Groton St., Forest Hills, N. Y. 6-30

.22 H. P. BARREL, pitted, but accurate, Ideal resizer, 100 empties, $20; or .25-20, Model 53, Winchester. J. W. Richardson, Gillette, Wyo. 6-30

COLT .380 auto., good condition, Eastman enlarging camera, 6½-inch x 8½-inch studio Camera, radio voltmeter, cost $12. WANT—Colt super .38 auto. Leslie B. McClees, 94 South St., Red Bank, N. J. 6-30

COLLECTORS, DEALERS, BUYERS—I want German Uhlans helmet, helmets, World War relics; have antique, few modern firearms; Colt Official Police 6-inch, hand-carved Heiser holster, cartridges, entire outfit, new, perfect, $25; Colt Military .38 auto., excellent, $22. Sergt. F. Schaub, 59 Winans Ave., Newark, N. J. 5-30

$30 SET Richter drafting instruments, new, for complete .30 W. C. F. reloading outfit, or binoculars. Putnam, 3028 Upas, San Diego, Calif. 6-30

WINCHESTER 55, .30-30, Savage bolt, late-model, .250-3,000, both as new and Lyman-sighted. WANT—Savage 99E .30-30; Winchester shotgun; or offers. Dr. C. J. Miller, Ord, Nebr. 6-30

TRADE

.25 COLT AUTO., new, for .30-40, .40-70, .40-90 Winchester S. S., or buy. State price. Henry Nonnemaker, R. F. D. No. 2, Bethlehem, Pa. 6-30

AIR-FLOAT RUBBER BOAT, used six times, complete with oars, pump, carrying case, for Model 52 Winchester, in gun-crank condition; or what have you? H. J. Ventch, M. D., Pittsburg, Kans. 6-30

GENUINE registered Chinchilla and New Zealand white rabbits for guns or other goods. Paul Muehlemann, R. F. D. No. 4, Clear Lake, Wis. 6-30

ZEISS 12 x 30 binocular for shotgun and revolver. What have you? Box 66, Aransas Pass, Tex. 6-30

U. S. ENFIELD .30-06, Model 1917, brand new. Will trade for .45 New Service 7½-inch barrel, or any good Colt. Will pay difference. James Schroeder, Y. M. C. A., Appleton, Wis. 6-30

ANSCO 3¼ x 4¼-inch folding roll film camera, F 7.5-1/150. WANT—.25-20 rifle, .22 S. S. pistol, or target or hunting scope. J. Beecher, 148 Halsted St., East Orange, N. J. 6-30

REMODELED KRAGS AND RUSSIANS and cartridges for Colt S. A. or New Service revolvers in good working order. Bud Dalrymple, Gunsmith, Scenic, S. Dak. 6-30

FIVE-TUBE KING battery radio, tubes, $35 speaker, all for $25. Registered beagles. WANT—Late Model 52 Winchester, 5A scope; or what have you? Howard Cunningham, Freeport, Ohio. 6-30

97 WINCHESTER 12, full, good. WANT—Colt .22 or .45 Springfield Sporter; or .22, or what? Art Bentley, Pendennis, Kans. 6-30

WANTED

WANT—A good serviceable .25-30 Savage Sporter rifle, reasonable; also a .25 Stevens Favorite rifle, reasonable. Floyd Kizer, Ridott, Ill. 6-30

WANT—Smith & Wesson or Colt .32 C. F. Whitney Navy, and Colt .31-caliber percussion revolvers. C. A. Carpenter, Jal, N. Mex. 6-30

WANT—Colt Frontier, S. A. Winchester, 20-gauge single-shot, Sharp action, Winchester .410 breakdown, good condition. Charles Lorentz, Sadsburyville, Pa. 6-30

WILL GIVE $20 for Smith & Wesson .22-caliber single-shot pistol in new condition; also want 3¼ x 5½ Ansco camera with 4.5 lens. Donald Kniece, 258 Bartlett Place, Elgin, Ill. 6-30

WANT—.30-06; .45 auto.; Krag ammunition. T. W. Hildeman, Kenwood, Helena, Mont. 6-30

WANT—.22-32 Smith & Wesson, .30-caliber Winchester; send description and price. M. Gorham, 129 W. Third, Covington, Ky. 6-30

WANT—.22 S. & W. straight-line pistol. Have old-time and modern arms. A Mann, 415 Hapgood St., Athol, Mass. 6-30

WANT—Reloading set and empty shells for 8-gauge shotgun. J. T. Maxwell, 1140 Medical Arts Bldg., Omaha, Nebr. 6-30

WANT—.38 and .44 center-fire and rim-fire Colts, old style, single-action, 6-shot revolvers. B. K. Wingate, Box 481, Reading, Pa. 6-30

WANT—Certain American firearms made before 1876. You may have one or more I require. Please advise. S. H. Croft, "Collector," Cynwyd, Pa. 1-31

WANT—Shotgun and rifle. State full particulars and lowest cash price. M. Morton, 512 Market St., Philadelphia, Pa. 6-30

WANTED—Colt or equivalent American cap-and-ball, muzzle-loading revolvers stamped as made by Samuel Colt, Patent Firearms Mfg. Co., Paterson, N. J., or by other American makers. If you have any, write giving full descriptions, markings, condition of finish, and price. Will pay cash or trade for other antique arms, if preferred. McMurdo Silver, 6401 West 65th St., Chicago, Ill. 4-31

WANT—To buy or trade for high-grade marine glass. What have you? Box 544, Austin, Tex. 7-30

WANT—.22 Reising auto., 10-inch barrel; .38 and .45 Colt auto., old model, rounded hammer. B. K. Wingate, Box 481, Reading, Pa. 6-30

WANT—Guns, diamonds, coins, anything valuable. Offer guaranteed radios, musical instruments. Dept. A, State Bank Bldg., Granville, Ill. 6-30

WANT—Good automatic shotgun. Must be priced reasonably. Will exchange good guns. Arthur W. Plumlee, Cambria, Ill. 6-30

WANT—To buy a .22 S. & W. perfected hand-ejector revolver. H. C. Barrett, Anthony, Kans. 6-30

WANT—Jersey City members to join Monticello Rifle Club. Dues $7 yearly, or $10 (to nonmembers), including N. R. A. membership. Ranges 50 feet and 50 yards; also outdoor range available. See or write to Secretary, 130 Monticello Ave., Jersey City, N. J. 6-30

WANT—Outboard motors, boats, guns, saddles, accordion, pipe organ, outside chime clock, sousaphones, coins, stamp, egg collection, rare jewelry, sculpture, fur, rugs, diamonds, rare birds and animals. John Redshaw, Granville, Ill. 6-30

WANT—A Gallery rifle barrel, .22 short, in perfect condition. Riley C. Sanford, Big Indian, N. Y. 6-30

WANTED—Present address of George Johnson, formerly at Proctorville, Ohio. Also present location of Lefever .410 double shotgun No. 204501. Ray Welker, 406 N. Harvey, Oak Park, Ill. 6-30

WANT—Reloading tools for .45-caliber auto., .30-40 Krag cartridges and powder measure. John Haynes, Jersey City, N. J. 6-30

WANT—.30-30 SAVAGE 99B; Remington 12 auto.; Remington .32-20 carbine; .20 Remington 1917; Remington .20 auto. Ray Welker, 406 North Harvey, Oak Park, Ill. 6-30

WANT—COLT N. S. or S. A. with serial number above 160,000. Barrel serviceable; mechanically perfect; appearance not important, price is; with complete loading tools. Everett Swift, 9 Dana St., Cambridge, Mass. 6-30

MISCELLANEOUS

OUTDOOR LIFE AND RECREATION combines in a single magazine the most popular features of two great publications—*Outdoor Life* and *Outdoor Recreation*. Published at Denver by John A. McGuire, the new combination is continuing the traditions of *Outdoor Life* and offering an even larger proportion of stories and articles on big-game hunting and rifle-shooting. The great Gun and Ammunition department is divided between Colonel Whelen, in charge of the Rifle and Pistol section, and Chas. Askins, on the shotgun. The new magazine is considerably larger than either of the two publications which have been combined and the increased space is permitting a far wider variety of gun and hunting material in every issue. The price of the new publication is twenty-five cents a copy, $2.50 a year—the lowest price at which any outdoor magazine of equal size can be secured. As a special get-acquainted offer to readers of THE AMERICAN RIFLEMAN, a trial five issues will be sent for $1. *Outdoor Life and Recreation*, 1802 Curtis St., Denver, Colo. tf

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No. 6 OF A SERIES OF TALKS ON AMMUNITION QUALITY

INTERIOR VIEW OF A CONSTANT TEMPERATURE MAGAZINE

The Life of Smokeless Powders

THE life of a smokeless powder is determined not only by the stabilizing agents that are incorporated in its manufacture but also by the purity of the materials of which it is made. And while strict chemical control is exercised at the powder plant, it is also highly desirable to have some means of checking the life of a powder after it has been loaded and has reached the hands of the shooter.

In discussing the life of smokeless powder, it must be remembered that powder will not stand abuse any more than other every-day articles of common use. Wood rots under excessive moisture, woolen clothes must be protected from moths, and rubber deteriorates if exposed to sunlight or oil. So with smokeless powder—it must be protected by storage under normal atmospheric conditions.

At the Brandywine Laboratory there are a number of constant temperature magazines in which samples of every lot of the various du Pont powders are stored in bottles as shown in the illustration. This particular magazine is kept at 30° C. (86° F.) day in and day out. Every few years a portion of each sample is removed and subjected to storage at the very high temperature of 65.5° C. (150 F.) until the powder breaks down.

As an example of the resistance to decomposition of a high-grade nitrocellulose shotgun powder, consider the following record of Lot 1101 of du Pont Smokeless Shotgun Powder which was made during the latter part of the year 1915, and placed in the 30° C. magazine on January 12, 1916.

Date of Test	*Days the Powder withstood Decomposition at 65.5° C.*
2- 8-16	1195 days
5- 7-19	820 days
2- 1-21	745 days
1-28-26	887 days

The balance of this fourteen-year-old sample is still held in the 30° C. and will again be subjected to the high temperature test at future periods even though it is most probable that all the ammunition loaded with this powder has been used over the traps or in the field several years ago.

Du Pont powders are used by all of the principal ammunition manufacturers. They have selected du Pont powders because their ballistic qualities contribute so largely to the superiority of the ammunition, and the consequent success of its users. To maintain these standards of excellence, the ammunition companies will continue to load those powders ensuring the best ammunition possible for a specified purpose.

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